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ABERDEEN PROVING GROUND
ABERDEEN PROVING GROUND, MARYLAND 21005
FIRING RECORD

6 March 1968

USATECOM Project No. 8-8-0200-17,
Comparison Test for Cyclic Rate
Comparison of Ball Cartridges in
WSEG (Weapon System Evaluation
Group) Weapons

Firing Record No.: S-46571
Dates of Test: 19 to 23 February 1968
Authority: AMSTE-BC Letter,
26 February 1968

W. O. No. 324-647-80

am

ITEMS UNDER TEST

Three hundred seven rifles, M16A1.
Twenty-nine thousand cartridges, 5.56-mm, M193; lots RA-5287, LC-12228,
LC-12245, and TW-18179.
One hundred fifty-six magazines, 20-round capacity (previously unused).

SUPPORTING FACILITIES AND MATERIALS

Two microphonic-initiated cyclic-rate recording machines.
Range facility building 744, consisting of controlled-temperature
ammunition storage room and heated firing positions and work shop.

DETAILS OF TEST

This test was conducted in accordance with the test directive, except for
the ten new weapons. These weapons were not received at APG prior to completion
of all firing and preparation of the test report.

During the initial inspection, weapon lubrication was found to be
MIL-L-644B (V-V-L-800) instead of MIL-L-46000A which was used during the WSEG
test. Initial firings of the ball propellant weapons were repeated after all
weapons were relubricated with the MIL-L-46000A to insure comparable function
performance to that obtained in the tropical tests.

Although all magazines used during the WSEG evaluation were received at
APG (15,000 magazines), the condition of the previously tested items was
unknown and the packaging (loose, in large cases) was not satisfactory to
insure that damage had not resulted during transport. Therefore, only the
new magazines, received with each weapon packing carton, were used during the
test at APG. All magazines were hand-loaded.

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Observations on over-all weapon condition at the time of inspection are discussed in the Summary of Results. These are general statements which are intended to point out areas of correct and insufficient maintenance. A complete evaluation by weapon is given in Inclosure 2.

SUMMARY OF RESULTS

Table I gives a summary of the average cyclic rates of fire obtained during the test phases at APG.

Table I. Summary of Weapon Cyclic Rate Averages

<u>Condition of Weapon Prior to Test</u>	<u>M1</u>	<u>M2</u>	<u>M3</u>	<u>M4</u>
1. As received	779	770	b -	b -
2. Test weapons after lubrication with MIL-L-46000A	859	841	754	723
3. Spare weapons after lubrication with MIL-L-46000A	825	796	723	723
4. Cross-reference firing of ball and IMR propellant loaded cartridges in weapons selected from 2, above	827	796	736	701
5. Extreme spread of average rates recorded in 2, 3, and 4, above	34	45	31	22
6. Average rate of 2, 3, and 4 weapons	837	811	738	716

^aAmmunition code M1 (lot RA-5287) and M2 (lot LC-12245) are ball propellant loaded. Code M3 (lot TW-18179) and M4 (lot LC-12229) are IMR loaded.

^bNot fired.

General comments on inspection of weapons are as follows:

- a. Exterior appearance, clean.
- b. Upper receiver, barrel extension and chamber, clean.
- c. Exterior of barrel under hand-guard, rusted.
- d. Interior of bore, fouled. This is a combination of rust, bullet jacket and propellant fouling, corrosion, and dirt.
- e. Bolt-closure assist device (BCA), inoperative, due to rust.

- f. Selector, inoperative, due to rust.
- g. Buffer retaining plunger, inoperative, due to rust.
- h. Lower receiver extension, internal corrosion in tubes lacking lubrication.
- i. Firing mechanism area of lower receiver, fouled. This area difficult to clean without disassembly.
- j. Parts missing, firing pins, firing-pin retaining pins and extractor springs. Apparently these parts were lost or inadvertently omitted during reassembly after cleaning by WSEG personnel.
- k. Broken parts, two hammer springs were broken.
- l. The variability of maintenance performed on the 307 weapons indicate a difference in inspection and care of the test items.
- m. The absence of lubrication from steel surfaces resulted in rusting of otherwise clean parts.
- n. The plastic caps which inclose the muzzle of the weapon in its shipping container may contribute to rusting and other deterioration of the rifle bore.

The variations in average cyclic rates for the four cartridge lots and their respective weapons are given in Table I. Round-by-round data are given in Inclosure 2.

Cyclic rates (for individual weapons) which were below the average extreme spread of a given cartridge lot, were, in most instances, found to be related to a loose carrier key, and broken or missing bolt rings. These conditions are noted in the inspection data and results of firing.

ROUND-BY-ROUND DATA

Round-by-round data are contained in Inclosure 2.

OBSERVATIONS AND REMARKS

This is the final report on this task.

SUBMITTED:

for Al Harbins
FRANKLIN H. MILLER
Test Director

REVIEWED:

for Al Harbins
S. A. DOILNEY
Chief, Small Arms and
Aircraft Weapons Branch

FOR THE COMMANDER:

Claude E. Brown
CLAUDE E. BROWN
Chief, Infantry and
Aircraft Weapons Division
Development and Proof Services

3 Incls

1. Authority
2. Inspection and Round-by-Round Data
3. Distribution List

AUTHORITY

DEPARTMENT OF THE ARMY
HEADQUARTERS, U.S. ARMY TEST AND EVALUATION COMMAND
ABERDEEN PROVING GROUND, MARYLAND 21005

AMSTE-BC

26 Feb 68

SUBJECT: Test Directive for Cyclic Rate Comparison of Ball Cartridges
in WSEG Weapons, USATECOM Project No. 8-8-0200-17

TO: Commanding Officer
Aberdeen Proving Ground
ATTN: STEAP-CO-P
Aberdeen Proving Ground, Md 21005

1. References:

a. Letter, AMCPM-RS, dated 13 Feb 68, Subject: Special Test of M16 Rifle, inclosed.

b. Message, AMCPM-RS, RI4495, dated 142349Z Feb 68, Subject: WSEG Panama Test - Cyclic Rate Test of M16A1 Rifles.

2. This command was informed verbally on 9 Feb 68 by AMCPM-RS that a requirement for expedited cyclic rate tests of WSEG weapons used in Panama tests was being generated by DA. Small Arms Branch, DPS, was immediately informed. Subsequent pertinent correspondence has been informally forwarded to Small Arms Branch on a continuous basis in order to expedite tests.

3. The test objectives are as follows:

a. To measure cyclic rates as associated with the weapons and ammunition lots used in the WSEG tests in Panama.

b. To obtain data on cyclic rate differences and levels in weapons both with approximately 6000 previous rounds and with weapons that are substantially new and from the same population. Toward this end, even though some weapons may have been used exclusively with IMR propellant, sampled cyclic rates of 10 weapons with 6000 rounds should be measured with Ball propellant in a group of the same rifles and vice versa.

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SUBJECT: Test Directive for Cyclic Rate Comparison of Ball Cartridges
in WSEG Weapons, USATECOM Project No. 8-8-0200-17

4. It is requested that CO, APG conduct a cyclic rate test using ammunition and weapons from the Panama Test. The following materiel should arrive at APG by 19 Feb 68.

a. Weapons - 307 M16A1 Rifles, tagged with number of previous rounds and identified by ammunition exposure.

b. Ammunition - 29,000 rounds each of cartridge lots RA5287, LC12245, TW18179 and LC12229. All are M193 ball cartridges, the first two contain different lots of ball propellant, the remainder contain two lots of IMR propellants.

c. Magazines - 15,000.

d. Funds - \$30,000, AMCMS 4420.16.0132.2.59.

5. This test is to be a maximum effort with priority over all other M16A1 Rifle Tests. Test time should not exceed one week. The following procedures are suggested:

a. Firing Cycles - 60 rounds (3 magazines) per weapon, per lot as used in the WSEG test and so designated for each weapon. In the event that a weapon malfunction occurs, change magazines and continue if malfunction is immediately correctable. If not immediately correctable, repeat entire 60 round cycle.

b. Maintenance - This command has been verbally informed that the weapons were cleaned and packaged using VV-L-800 lubricant but the test was conducted using MIL-L-46000A. In view of this, all weapons must be field stripped and lubricated with MIL-L-46000A. Any weapons fired in the "as received" condition must be field stripped and lubricated with MIL-L-46000A and refired.

c. There is no requirement to fire the ten new weapons which may be provided by AMCPM-RS. The spares are believed to be relatively new weapons (Less than 260 previous rounds).

d. After completion of cyclic rate measurement with the designated

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SUBJECT: Test Directive for Cyclic Rate Comparison of Ball Cartridges
in WSEG Weapons, USATECOM Project No. 8-8-0200-17

propellant for each weapon, select ten weapons from each group, switch propellants, and repeat cyclic rate measurement. The weapons designated as spares are excluded.

6. USATECOM Project No. 8-8-0200-17, Priority 1, SEA related is assigned.

7. A test plan is not required. An unclassified firing record is acceptable. As a minimum cyclic rate per magazine averaged over 60 rounds for each individual weapon with a grand average for each group of weapons identified by propellant type should be tabulated. Assuming that the spare weapons are relatively new, a separate tabulation for these weapons is desired. Test report should be forwarded so as to reach AMCPM-RS not later than 28 Feb 1968.

8. Distribute the reports as follows:

CG USAMC ATTN: AMCPMSO-RS	20 copies
CG USAMC ATTN: AMCPM-RS	5
CG USATECOM ATTN: AMSTE-BC	5

FOR THE COMMANDER:

1 Incl
as (w/ 1 incl only)

/s/ Robert B. Tully
/t/ ROBERT B. TULLY
Colonel, GS
Dir, Inf Mat Test Dir

Copies furnished:

CG USAMC ATTN: AMCPMSO-RS (w/o incl)
AMCPM-RS (w/o incl)
CO APG ATTN: STEAP-DS

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COPY/bm

Firing Record No. S-46571

DEPARTMENT OF THE ARMY
UNITED STATES ARMY MATERIEL COMMAND
PROJECT MANAGER - RIFLES
ROCK ISLAND ARSENAL
ROCK ISLAND, ILLINOIS 61201

IN REPLY REFER TO:
AMCPM-RS

13 FEB 1968

SUBJECT: Special Test of M16 Rifle

TO: Commanding General
U.S. Army Test & Evaluation Command
ATTN: AMSTE-BC
Aberdeen Proving Ground, Md. 21005

1. References:

a. Ltr, ADCSLOG (P&B)-M16, dtd 9 Feb 68, subj: Special Test of M16 Rifle with classified inclosure: Memorandum for the Under Secretary of the Army, dtd 31 Jan 68, subj: Special Test of M16 Rifles (Incl 1).

b. Memorandum for Mr. Robert Gibson, ODDR&E, dtd 2 Feb 68, subj: Suggested Follow-up Tests on the M16 Rifle System with Inclosures (Incl 2).

2. Reference 1a directs that certain additional rifle and ammunition tests be undertaken in support of the WSEG Panama M16A1 Rifle Tests.

3. In accordance with paragraphs 1 and 2 of reference 1a, request that USATECOM conduct a cyclic rate test on 309-M16A1 Rifles used in the WSEG tests. Recommend that the cyclic rate of fire measurements be obtained by firing three (3) magazines of 20 rounds each, per weapon, per lot of ammunition.

4. The 309-M16A1 Rifles (serial numbers and type of propellant fired from each rifle are shown in Incl 2) and four (4) lots of M193 Ball Ammunition (2 lots with ball propellant and 2 lots with IMR propellant) will be shipped to D&PS to arrive NLT 19 February 1968.

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Firing Record No. S-46571

AMCPM-RS

SUBJECT: Special Test of M16 Rifle

13 FEB 1968

5. Upon completion of the WSEG tests, the rifles were individually cleaned in accordance with prescribed maintenance procedures and were lubricated with MIL-L-46000A Lubricant. On 13 February 1968, the USMC opened a rifle box and observed that the rifle exhibited extensive rust. Based upon this one (1) observation it must be assumed that a part of the remaining rifles may exhibit the same condition. Request that USATECOM determine the type of maintenance required before starting the test and indicate the type of maintenance performed in the final report.

6. Funds in the amount of \$30,000 will be provided for the conduct of the test. Since the \$30,000 was a verbal estimate from USATECOM, request that a message be sent to this office indicating the amount of funds required for the test.

7. In conjunction with those 309 rifles being shipped to D&PS, an additional 10 new M16A1 Rifles will also be provided. Request that a similar cyclic rate of fire measurements be obtained on these rifles.

8. Request that the cyclic rate measurements from the 309 Panama Rifles be provided directly to the Commanding General, U.S. Army Materiel Command, ATTN: AMCPMSO-RS LTC Squires, Washington, D. C. 20315, with information copy to this office. The measurements from the 10 new rifles should be sent to this office.

9. The special cyclic rate test on the Panama rifles takes priority over all rifle tests currently being conducted by D&PS. Request that maximum effort be placed on the cyclic rate test.

2 Incl
as Incl 2 w/d

/s/ Alvin C. Isaacs
/t/ ALVIN C. ISAACS
Colonel, OrdC
Project Manager, Rifles

Copy furnished: w/o Incl
CG, USAMC, ATTN: AMCPMSO-RS LTC Squires

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Firing Record No. S-46571

DEPARTMENT OF THE ARMY
OFFICE OF THE DEPUTY CHIEF OF STAFF FOR LOGISTICS
WASHINGTON, D.C. 20310

ADCSLOG(P&B)-M16

9 February 1968

SUBJECT: Special Test of M-16 Rifle

TO: Commanding General
U. S. Army Materiel Command
ATTN: AMC-PMRS
Washington, D. C. 20315

1. The attached Memorandum from the Director of Defense Research and Engineering requests the Army to take immediate steps to measure the cyclic rates of all M-16 rifles used in the Panama test.
2. In addition to the instructions contained in the attached Memorandum the following additional instruction is provided.
 - a. Do not adjust or modify in any way any of the rifles.
 - b. At the conclusion of this test, clean and lubricate the weapons and hold them pending further instruction.
3. Serial numbers of the rifles identified to the type propellant fired in Panama have been provided to LTC Squires, Project Manager Rifles, Staff Officer, HQ AMC.
4. Results of these tests will be provided to ADCSLOG(P&B)-M16 for transmission to Department of Defense.
5. Request this Headquarters be advised of the site of these tests and when the results may be expected.

FOR THE DEPUTY CHIEF OF STAFF FOR LOGISTICS:

1 Incl
as w/d

/s/ W. P. Cumble
/t/ W. P. CUMBLE
Colonel, GS
Special Asst to ADCSLOG(P&B)
for M-16 Rifle Matters

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From Classified Inclosures

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INSPECTION AND ROUND-BY-ROUND DATA

Prior to receipt of the test weapons and ammunition, a listing of the materiel was obtained from the WSEG report. This inclosure gives detailed results.

Division of Weapon and Ammunition by Cartridge Lot

Code: R-1, new buffer and CPC.
 R-2, new buffer, non-CPC.
 R-3, new buffer, non-CPC. Buffer not factory installed.

Squad No.:	1	2	3	4
Propellant Type:	Ball	Ball	IMR	IMR
Propellant Lot No.:	RA-5287	LC-12245	TW-18179	LC-12229
Ammunition Code:	M1	M2	M3	M4

R-Code, All Weapons	<u>Weapon No.</u>		<u>Weapon No.</u>		<u>Weapon No.</u>		<u>Weapon No.</u>	
	<u>Test</u>	<u>Serial</u>	<u>Test</u>	<u>Serial</u>	<u>Test</u>	<u>Serial</u>	<u>Test</u>	<u>Serial</u>

Platoon No.: 1.

1	101	855886	121	884476	141	856987	161	856277
1	102	883840	122	846783	142	856552	162	859290
1	103	885549	123	883353	143	858945	163	876896
1	104	854128	124	857034	144	846169	164	884831
1	105	884130	125	859047	145	857328	165	885155
1	106	880985	126	854517	146	848500	166	885334
2	107	767427	127	767195	147	766301	167	769466
3	108	534748	128	551966	148	544446	168	550456
2	109	770997	129	766620	149	770900	169	768097
2	110	767105	130	768198	150	771108	170	767174
3	111	534183	131	553744	151	546766	171	531614
2	112	762857	132	771321	152	769180	172	765361
1	119	885651	139	874306	159	875150	179	886835

Platoon No.: 2.

1	201	873540	221	885103	241	885430	261	875839
1	202	882691	222	885225	242	884059	262	884361
1	203	884742	223	874198	243	884978	263	861133
1	204	883173	224	875388	244	884205	264	858548
1	205	883864	225	885036	245	885360	265	857203
1	206	885552	226	884958	246	884278	266	857594
2	207	769606	227	771730	247	776311	267	773966
3	208	549804	228	534668	248	534037	268	533571

Firing Record No. S-46571

Squad No.:

Propellant Type:

Propellant Lot No.:

Ammunition Code:

1
Ball
RA-5287
M1

2
Ball
LC-12245
M2

3
IMR
TW-18179
M3

4
IMR
LC-12229
M4

R-Code,
All Weapons

	Weapon No.		Weapon No.		Weapon No.		Weapon No.	
	Test	Serial	Test	Serial	Test	Serial	Test	Serial
2	209	777869	229	768111	249	777828	269	774349
2	210	775807	230	772726	250	770101	270	766850
3	211	534612	231	530408	251	530020	271	547759
2	212	777025	232	772586	252	771185	272	775307
1	219	874415	239	888470	259	875154	279	885948

Platoon No.: 3.

1	301	856603	321	852876	341	856609	361	857557
1	302	857107	322	857353	342	857527	362	857803
1	303	852871	323	834226	343	857417	363	854856
1	304	857414	324	852874	344	848747	364	854705
1	305	852611	325	787952	345	856728	365	854689
1	306	857359	326	858810	346	858426	366	856441
2	307	770604	327	772739	347	773054	367	769155
3	308	552634	328	533402	348	553319	368	530397
2	309	775451	329	774566	349	773526	369	770632
2	310	776051	330	774300	350	774071	370	776206
3	311	532994	331	553437	351	533223	371	547837
2	312	773310	332	778895	352	772815	372	765311
2	319	777913	339	773271	359	774537	379	769996

Platoon No.: 4.

1	401	851160	421	888074	441	876162	461	886051
1	402	851156	422	875481	442	874540	462	875695
1	403	888439	423	888465	443	876212	463	875837
1	404	875184	424	885882	444	874733	464	875465
1	405	875601	425	885695	445	889213	465	887510
1	406	874987	426	876268	446	887521	466	888839
2	407	768043	427	768755	447	764458	467	772577
3	408	534939	428	552436	448	530322	468	550388
2	409	767954	429	777369	449	771622	469	771355
2	410	767607	430	771958	450	772884	470	771489
3	411	550321	431	551011	451	550408	471	532653
2	412	772052	432	771676	452	770504	472	770613
3	419	551584	439	531949	459	553195	479	552430

Extra Weapons, Segregated by Ammunition and R-Codes

R-Code, All Weapons	M1		M2		M3		M4	
	Weapon No.		Weapon No.		Weapon No.		Weapon No.	
	Test	Serial	Test	Serial	Test	Serial	Test	Serial
3	501	857761	502	858203	503	854969	505	857764
3	508	851090	507	858222	512	857772	511	857117
3	509	853257	510	851241	513	855455	515	849835
3	517	843853	514	857777	532	831385	522	850914
3	518	849350	524	854402	535	855868	523	851526
3	520	858498	527	857039	538	852888	525	853551
3	521	855735	529	855309	542	844784	526	819762
3	537	854923	530	858727	-	-	539	857280
3	543	855489	540	852414	-	-	544	854237
3	-	-	-	-	-	-	545	848562
2	601	776795	602	768323	603	766577	604	770903
2	605	772567	606	775166	607	772524	618	764704
2	612	770647	609	767587	611	767046	-	-
2	614	769431	613	763187	615	774760	-	-
2	616	766723	617	768464	619	768124	-	-
2	-	-	622	768816	-	-	-	-
1	705	532216	702	532499	707	533505	704	533720
1	709	534669	703	535103	715	533046	708	531062
1	717	531071	706	531925	716	534060	712	530030
1	728	534847	710	533037	722	533681	714	530746
1	729	552044	718	532390	725	532912	720	530153
1	730	531027	721	531831	731	580894	723	533221
1	-	-	724	552448	-	-	-	-
1	-	-	727	531395	-	-	-	-

Weapon Inspection

Weapon Test No.	Inspection and Observations
101	Fouled bore and firing mechanism of lower receiver. Rust on carrier key, cover, and BCA.
102	Same as No. 101 except no rust on carrier key.
103	Weapon tagged "enlarged hammer-pinhole, do not use." Weapon generally fouled; no rust.
104	Automatic sear-release spring bent and out of position; straightened and reinstalled. Weapon lacking lubricant and, as a result, the steel components are lightly rusted.
105	Fouled bore and firing mechanism of lower receiver. Light rust on barrel exterior around front sight.
106	Fouled bore. Weapon lacking lubricant. Firing-pin retaining pin missing; new part installed.
107	Fouled bore and firing mechanism of lower receiver. Lower receiver extension internally corroded. Action spring-guide (buffer) retaining plunger rusted in position. Weapon without traces of lubricant.
108	Same as No. 107.
109	Over-all light fouling of entire weapon.
110	Minimal bore fouling. Light over-all rusting of cover and bolt carrier.
111	Fouled bore and firing mechanism of lower receiver (slight). BCA ? rusted within upper receiver.
112	Same as No. 111.
119	Fouled bore. Weapon without traces of lubricant.
121	Fouled bore and firing mechanism of lower receiver.
122	Same remarks as No. 121 plus rust on bolt carrier. Weapon without traces of lubricant.
123	Same as No. 121.
124	Fouled bore. Light over-all rust on bolt carrier, cover, and BCA.
125	Fouled bore and filthy firing mechanism of lower receiver. Weapon without traces of lubricant. Replaced ejector spring (set 1/10 inch) and eliminated FJ type malfunctions which occurred during the test.
126	Same remarks as No. 121.
127	Clean bore, minimal fouling in lower receiver. Weapon without traces of lubricant.
128	Same as No. 122.
129	Extremely fouled bore and filthy firing mechanism of lower receiver Carrier key covered with rust.
130	Same as No. 122 plus rust on cover bolt and BCA.

Weapon Test No.	Inspection and Observations
131	Clean, but without traces of lubrication. Firing pin missing; installed new part.
132	Same as No. 121.
139	Extremely fouled bore and lower receiver (moderate). Light rust on bolt and carrier assemblies.
141	Slightly fouled lower receiver, otherwise basically clean.
142	Same as No. 141.
143	Bolt and carrier rusted together. Had to use force to retract the bolt and carrier in the weapon. Selector inoperative as rust prevented manual positioning. Weapon did not exhibit traces of lubricant on any part. Remainder of parts clean.
144	Clean weapon.
145	Fouled bore. Same remarks on rusting components as No. 143.
146	Clean weapon.
147	Fouled lower receiver.
148	Slight rust on bolt.
149	Rust on bolt and carrier assemblies.
150	Clean weapon.
151	Rust on bolt and carrier assemblies. Firing pin stuck in the bolt because of internal fouling of the pinhole.
152	Clean weapon.
159	Fouled bolt. Rusty cover.
161	Rusted action spring, bolt, bolt carrier, cover, BCA, and all steel components in the lower receiver. No evidence of lubrication.
162	Rust on carrier key, bolt cam pin, and BCA.
163	Fouled bore. Rust on carrier key, bolt, cover, and BCA.
164	Fouled bore. Light traces of rust on bolt, cover, and BCA.
165	Fouled bore and lower receiver. Rust on bolt, bolt carrier, and BCA.
166	Fouled bore and lower receiver. Bolt dirty.
167	Bolt and carrier rusted together; had to use force to retract these components in the weapon. Firing pin stuck in the bolt. Remainder of components reasonably clean.
168	Dirty action spring. Rust on cover and BCA.
169	Carrier rusted. Weapon without traces of lubricant.
170	All steel parts covered with a light coat of rust. Firing pin stuck in bolt due to internal fouling of the hole. Fouled bore.
171	Bolt carrier heavily rusted. All other steel parts moderately rusted.

Weapon
Test No.

Inspection and Observations

- 172 Same remarks as No. 171 plus firing pin stuck in bolt; had to be driven out with a punch and hammer.
- 179 Same as No. 172. No lubricant evident on the weapon.
- 201 Fouled bore and lower receiver. Rust on cover and BCA.
- 202 Fouled bore and filthy firing mechanism of lower receiver. No traces of lubricant. Broken carrier key screw (rear). Broken screw drilled out and new part installed.
- 203 Clean bore. Light rust traces on bolt carrier, otherwise, weapon clean.
- 204 Clean bore. Rust on bolt and carrier assemblies, cover, and BCA. Minimal fouling in firing mechanism of lower receiver.
- 205 Clean weapon.
- 206 Filthy lower receiver and fouled bore. Weapon was lubricated (V-V-L-800).
- 207 Fouled bore and firing mechanism of lower receiver. Rust on cover.
- 208 Same as No. 206.
- 209 Clean weapon. Bolt and carrier without lubrication.
- 210 Fouled bore, rust on BCA. Cleaning patch remnants in firing mechanism of the lower receiver.
- 211 Filthy firing mechanism of the lower receiver.
- 212 Same as No. 207.
- 219 Fouled bore, corroded rear sight. Rust on cover; selector inoperative due to rust.
- 221 Light bore and lower receiver fouling. Cover and BCA rusted. One broken bolt ring.
- 222 Selector inoperative due to rust. Bolt face, carrier (inside rear) lightly rusted. No lubrication evident.
- 223 Heavily fouled bore and filthy firing mechanism of lower receiver.
- 224 Fouled bore and lower receiver.
- 225 Light fouling of bore and lower receiver. Face of buffer heavily etched. Front sight rusted at points of contact with barrel.
- 226 Fouled bore and lower receiver.
- 227 Same as No. 225.
- 228 Same as No. 225 plus front sling-swivel retaining pin half out of position; part was reinstalled.
- 229 Same as No. 225 except that the cover was rusty.
- 230 Selector inoperative due to rust. Remainder of weapon clean.
- 231 Same as No. 226.
- 232 Same as No. 226.
- 239 Same as No. 229. Weapon without traces of lubricant.

Weapon
Test No.

Inspection and Observations

- 241 Light fouling in bore and lower receiver. Generally, a light coating of rust covered all steel parts of this weapon. Parts lacked lubricant.
- 242 Same remarks as No. 241 plus a missing firing-pin retaining pin. A new part was assembled.
- 243 Rust on bolt and carrier assemblies, front sight, and exterior of barrel. No lubricant on the parts.
- 244 Same as No. 241.
- 245 Weapon tagged "improper feeding, do not use." Handle part of the upper receiver was attacked by spot-corrosion in the form of tiny white specks. Carrier key was loose and caused the malfunctions; corrected by tightening and restaking the two key screws.
- 246 Same as No. 241.
- 247 Same as No. 241.
- 248 Extremely heavy bore fouling. Other remarks same as No. 241.
- 249 Bolt and carrier assemblies hard to disassemble due to rust of these parts. Fouled bore and lower receiver. No lubricant on parts.
- 250 Clean weapon except for fouling around gas tube at forward end of upper receiver.
- 251 Selector inoperative due to rust. Firing mechanism of lower receiver rusted. Fouled bore.
- 252 Extremely heavy bore fouling.
- 259 Light bore fouling.
- 261 Clean weapon.
- 262 Rust on bolt, bolt carrier and cover.
- 263 Fouled bore. Bolt rusted and without lubrication.
- 264 Fouled bore. Rusted bolt and bolt carrier assemblies.
- 265 Fouled bore. Rusted bolt and carrier key.
- 266 Rusted bolt carrier.
- 267 Fouled bore and rusted bolt cam pin.
- 268 Fouled bore. Rusted bolt, bolt carrier, cover, bolt cam pin, and BCA. Stock cracked on right side for approximately 1 inch by 1/2 inch. Apparently caused by falling on or impacting the stock on a hard, irregular surface.
- 269 Fouled bore. Rusted bolt and cover.
- 270 Clean weapon. Firing-pin retaining pin missing; a piece of wood (match stick) was found in its place. A new (standard part) was installed.
- 271 Fouled bore. Bolt was rusted and the selector inoperative due to rust.
- 272 Fouled bore.
- 279 Fouled bore.

Weapon
Test No.Inspection and Observations

- 301 Fouled bore and firing mechanism of lower receiver.
302 Same as No. 301 plus inoperative selector due to rust. No lubrication was noted.
303 Fouled bore and filthy lower receiver.
304 Clean bore. Fouled lower receiver. Cover was rusted.
305 Filthy lower receiver.
306 Fouled bore and lower receiver.
307 Fouled bore. Trigger sear area and carrier key were rusted.
308 Light fouling of bore and lower receiver. Hammer spring (right leg) positioned across to left side. Part repositioned to lock trigger pin in position.
309 Clean bore. Light fouling of lower receiver. Rusted BCA.
310 Fouled bore. Light rust on bolt and carrier assemblies. No lubricant on parts.
311 Clean bore. Light over-all fouling of the weapon.
312 Clean bore. Fouled firing mechanism of lower receiver.
319 Light fouling of bore and lower receiver.
- 321 Entire weapon filthy. All steel parts coated with rust and without lubrication. Selector inoperative due to rust.
322 Bore clean. Lower receiver fouled.
323 Bore and lower receiver fouled. Bolt carrier rusted. No lubrication evident.
324 Right leg of hammer spring broken; new part installed. Bore and lower receiver fouled. Rust on bolt and carrier assemblies, cover, and BCA. No lubrication noted.
325 Fouled bore and lower receiver. Buffer retaining plunger rusted in place. No lubrication noted.
326 Fouled bore and lower receiver. BCA inoperative due to rust. Cover rusted. No lubrication on parts.
327 Clean bore. Filthy lower receiver. Buffer retaining plunger rusted in place.
328 Minor fouling in lower receiver only.
329 Fouled bore and lower receiver. Rust on carrier.
330 Fouled bore and filthy lower receiver. Buffer retaining plunger rusted in place. Cover rusted.
331 Fouled bore and lower receiver. Rusted cover.
332 Clean bore. Minor fouling in firing mechanism of lower receiver.
339 Fouled bore and lower receiver. All steel parts had a light coating of rust. No lubrication evident.

Weapon
Test No.

Inspection and Observations

341 Fouled lower receiver. Rust on bolt carrier, cover, and BCA.
 342 Rusted firing mechanism of lower receiver, cover, and BCA.
 343 Fouled lower receiver.
 344 Fouled lower receiver. BCA inoperative due to rust. Cover rusted.
 345 Fouled bore and lower receiver and light rusting of bolt carrier.
 346 Same as No. 345 plus no lubrication in evidence.
 347 Inoperative BCA due to rust. Remainder of weapon clean.
 348 Clean weapon.
 349 Clean weapon except for light rust on bolt cam pin. Very light lubrication evident.
 350 Fouled bore and lower receiver. Firing pin had to be forced out of the bolt with a hammer and punch due to the excess of fouling that remained on the inside of the bolt after cleaning.
 351 Fouled lower receiver. Inoperative BCA due to rust. Rust on bolt and carrier assemblies, cover, and front sight.
 352 Fouled bore and lower receiver. Rust on the firing mechanism components of the lower receiver.
 359 Same as No. 352 plus rusted BCA.
 361 Fouled lower receiver. A light coating of rust covered all steel components of this weapon. No lubricant was noted.
 362 Same as No. 361.
 363 Fouled lower receiver.
 364 Broken hammer spring (right leg). New part installed. Fouled lower receiver.
 365 Fouled bore and lower receiver.
 366 Fouled lower receiver. Inoperative BCA due to rust. Rusted bolt and bolt carrier assemblies.
 367 Clean weapon tagged "incorrect feeding, do not fire."
 368 Minor fouling in lower receiver only.
 369 Fouled bore only.
 370 Rusted cover only.
 371 Extremely heavy bore fouling. Inoperative BCA due to rust. Bolt and cover rusted.
 372 Fouled bore and lower receiver. Inoperative selector due to rust. Rusted bolt carrier.
 379 Fouled bore and lower receiver. Rusted firing mechanism components of lower receiver.

Weapon
Test No.

Inspection and Observations

401 Extremely heavy bore fouling and filthy lower receiver.
 402 Fouled bore and lower receiver. Extractor spring missing;
 installed new part,
 403 Fouled bore and lower receiver. Inoperative selector due to rust.
 404 Fouled bore and lower receiver.
 405 Fouled lower receiver only. Severe etching of front end of buffer.
 406 Fouled bore. Rusted selector and BCA. Bolt and bolt carrier
 lacking lubrication.
 407 Fouled bore. Carrier rusted. No bevel on end of bolt carrier.
 Great variation in this dimension noted on the weapons inspected.
 408 Same as No. 407 plus fouled lower receiver.
 409 Fouled bore and lower receiver. Extractor spring missing; new
 part installed.
 410 Same as No. 404.
 411 Same as No. 404 plus a rusted cover.
 412 Same as No. 404.
 419 Same as No. 404 plus one broken bolt ring.

421 Minor fouling in bore and lower receiver. This weapon was
 liberally lubricated with MIL-L-644B.
 422 Light bore and lower receiver fouling. Cover and BCA rusted.
 423 Extremely heavy bore fouling and filthy lower receiver. Rusted
 carrier key. No lubrication of the weapon was evident.
 424 Light bore and lower receiver fouling. Selector hard to
 operate due to rust.
 425 Extremely heavy bore fouling and filthy lower receiver. General
 rusting of all steel parts was evident. No lubrication was used.
 426 Fouled bore and lower receiver.
 427 Same as No. 426 plus rusted cover.
 428 Same as No. 426.
 429 Same as No. 426.
 430 Rusted bolt carrier, BCA, and buffer retaining plunger. Fouled
 lower receiver. No lubricant evident.
 431 Same as No. 426. One broken and one missing bolt ring.
 432 Same as No. 426 plus rusted cover, BCA, and bolt carrier.
 439 Extremely heavy bore fouling and moderately fouled lower receiver.

441 Clean weapon.
 442 Clean weapon.
 443 Clean weapon.
 444 Clean weapon.
 445 Clean weapon except for light rust on bolt, bolt cam pin, and
 bolt carrier due to lack of lubricant.

Weapon Test No.	Inspection and Observations
446	Same as No. 445.
447	Minor bore fouling only.
448	Minor fouling in lower receiver.
449	Minor bore fouling only.
450	Minor bore fouling and light rust on carrier.
451	Minor fouling in lower receiver and slight bore fouling.
452	Fouled bore. Rust on BCA, bolt cam pin, and bolt due to lack of lubrication.
459	Clean weapon.
461	Clean weapon.
462	Fouled bore and lower receiver.
463	Minor fouling in lower receiver.
464	Same as No. 463.
465	Same as No. 463.
466	Same as No. 463 plus fouled bore.
467	Same as No. 466.
468	Fouled bore and lower receiver. Bolt rusted.
469	Fouled bore and lower receiver.
470	Same as No. 469.
471	Fouled lower receiver only.
472	Fouled bore only.
479	Fouled bore only.

Notes: Inspection of the spare weapons revealed that all weapons which were fired had fouled bores. Several weapons were incomplete and others were not properly identified as to ammunition type used. All weapons of this category which were test-fired at Aberdeen Proving Ground were inspected and found clean except for the bore fouling.

Weapon test No. 517 was tagged "fired 240 rounds without malfunction; needs bolt rings." There appears to be some discrepancy of the tag marking as the weapon was incapable of firing more than two consecutive rounds when set on automatic fire.

Weapon test No. 606 not tagged to indicate absence of gas rings on bolt. Weapon was fired and results obtained were identical to those of No. 517.

Legend

The number of malfunctions and point of occurrence are given for each 20-round group (i.e., 1-FJ 16 = one failure to eject, round No. 16).

Stub 1 = Méplat of top projectile in magazine contacts front of magazine or upper receiver adjacent to feed ramp.

FJ = Failure to eject.

DF = Double feed.

BOB = Bolt overrode base of feeding cartridge.

FC-DR = Failure to chamber cartridge which was damaged during the chambering cycle.

FF = Failure to feed.

FFR = Failure to fire chambered cartridge.

FS1 = Failure to strip first cartridge from fully-loaded magazine.

FX = Failure to extract.

FS = Failure to strip.

FBR = Failure of bolt to remain at rear after firing last round in magazine.

Malfunction Number and Type

Test	Prop.	Malfunction Type										Total	No. Rds Fired		
		FSI	Stub	I	FF	DF	BOB	FC-DR	FFR	FX	FJ			FBR	
Weapons as received	Ball		4		2				a2		4			12	11927
6000-round weapons after lubrication	Ball					2		1			b12			15	6502
Spare weapons	IMR	2			c2	1			d1			10		16	6304
	Ball		1				1					6		8	2480
Cross reference	IMR	1				1			e1					4	2201
	Ball					1								1	1217
propellant firing (i.e., IMR in ball weapons, ball in IMR weapons)	IMR							1						1	1220
Total		3	5	4	5	3	1	2	2	2	16	16	57	31851	

- a Extractor spring missing in two weapons.
- b Five stoppages charged to damaged or deformed parts.
- c Charged to loose carrier key.
- d Charged to lack of flash hole in cartridge case.
- e Charged to deformed automatic trip sear binding in lower receiver.

Note: New magazines supplied by WSEG were used in all test weapons.

Cyclic Rates for Weapons As Received

R-Code	Weapon Test No.	20-Rd Cyclic Rate, rd/min				Remarks	
		1	2	3	Avg		
Ammunition Code: M1 fired in M1 weapons.							
1	101	762	789	808	786	Refired first 20 rounds; only 19 rounds recorded.	
1	102	765	778	759	767		
1	103	761	761	744	755		
1	104	789	813	823	808		
1	105	834	847	845	842		
1	106	768	778	772	773		
2	107	767	788	808	788		
3	108	796	776	775	782		
2	109	809	799	791	800		
2	110	799	808	791	799		
3	111	836	844	855	845		
2	112	756	796	823	792		
1	119	768	759	776	768		
Average		785	795	798	793		
Ammunition Code: M2 fired in M1 weapons.							
1	101	752	776	791	773		1-Stub 1 of first magazine.
1	102	758	770	775	768		
1	103	694	714	716	708		
1	104	762	808	840	803		
1	105	775	820	845	813		
1	106	740	746	783	756		
2	107	699	759	791	750		
3	108	723	731	756	737		
2	109	759	768	808	778		
2	110	753	765	789	769		
3	111	799	804	844	816		
2	112	783	808	844	812		
1	119	740	753	772	755		
Average		749	771	796	772		

Firing Record No. S-46571

R-Code	Weapon Test No.	20-Rd Cyclic Rate, rd/min				Remarks
		1	2	3	Avg	
Ammunition Code: M1 fired in M2 weapons.						
1	121	719	750	770	746	
1	122	772	768	791	770	
1	123	775	780	765	773	
1	124	747	758	765	757	
1	125	753	759	788	767	
1	126	765	761	778	768	
2	127	762	792	804	786	
3	128	736	716	716	723	
2	129	808	796	801	802	
2	130	799	825	842	822	
3	131	781	799	816	799	
2	132	775	802	813	797	
1	139	744	759	768	757	
Average		764	774	786	775	
Ammunition Code: M2 fired in M2 weapons.						
1	121	724	744	761	743	
1	122	726	755	770	750	
1	123	730	734	753	739	
1	124	736	753	775	755	
1	125	716	764	791	757	1-FJ 16 of third magazine, refired.
1	126	752	755	778	762	
2	127	747	784	802	778	
3	128	698	708	749	718	
2	129	727	784	794	768	
2	130	781	822	845	816	
3	131	772	794	825	797	
2	132	802	825	822	816	1-DF 19/20 of first magazine, refired.
1	139	726	762	773	754	
Average		741	768	788	766	

R-Code	Weapon Test No.	20-Rd Cyclic Rate, rd/min				Remarks
		1	2	3	Avg	
Ammunition Code:		M1 fired in M1 weapons.				
1	201	789	813	818	807	2-Stub 1 (first and second magazines).
1	202	602	581	538	574	First trial gave 3 FS1 and 2 FS. Weapon lubricated with MIL-L-4600A and refired (ref inspection notes).
1	203	722	747	750	740	
1	204	736	750	767	751	1-Stub 1 of first magazine.
1	205	825	827	813	822	
1	206	772	786	791	783	
2	207	773	802	789	788	1-FJ 13 of first magazine (broken extractor spring), 1-DF 18/19 of third magazine. Refired group.
3	208	682	714	716	704	
2	209	791	775	788	785	
2	210	792	802	809	801	
3	211	806	829	829	821	
2	212	791	791	786	789	
1	219	773	762	791	775	
Average		758	768	768	765	
Ammunition Code:		M2 fired in M1 weapons.				
1	201	773	808	809	797	
1	202	-	-	-	-	Refer to inspection notes, weapon not functional.
1	203	726	750	775	750	
1	204	743	744	784	757	
1	205	772	792	822	795	
1	206	755	781	815	784	
2	207	749	789	799	779	
3	208	689	698	730	706	
2	209	747	770	794	770	
2	210	737	767	802	769	
3	211	765	796	825	795	
2	212	747	756	791	765	
1	219	761	759	778	766	
Average		747	768	794	769	

R-Code	Weapon Test No.	20-Rd Cyclic Rate, rd/min				Remarks
		1	2	3	Avg	
Ammunition Code: M1 fired in M2 weapons.						
1	221	671	730	736	712	
1	222	756	783	791	777	
1	223	808	825	829	821	
1	224	844	844	855	848	
1	225	789	809	813	804	
1	226	811	842	844	832	
2	227	816	863	825	835	1-DF 19/20 of third magazine, refired.
3	228	722	747	764	744	
2	229	743	730	744	739	
2	230	752	762	783	766	
3	231	723	656	706	695	
2	232	773	755	762	763	
1	239	661	608	626	632	
Average		759	766	775	767	
Ammunition Code: M2 fired in M2 weapons.						
1	221	-	-	-	-	Weapon fails to eject.
1	222	716	770	781	756	
1	223	775	801	804	793	
1	224	838	844	863	848	
1	225	773	775	789	779	
1	226	775	822	844	814	
2	227	781	791	808	793	
3	228	716	730	753	733	
2	229	719	759	744	741	
2	230	734	764	789	762	
3	231	706	736	756	733	
2	232	759	772	784	772	
1	239	639	626	678	648	
Average		744	766	783	764	

R-Code	Weapon Test No.	20-Rd Cyclic Rate, rd/min				Remarks
		1	2	3	Avg	
Ammunition Code: M1 fired in M1 weapons.						
1	301	773	791	813	792	
1	302	736	741	765	747	
1	303	775	801	802	793	
1	304	767	816	820	801	
1	305	744	781	773	766	
1	306	758	775	780	771	
2	307	716	726	772	738	
3	308	781	801	802	795	
2	309	744	791	792	776	
2	310	780	796	816	797	
3	311	749	753	773	758	
2	312	834	853	849	845	
2	319	741	767	764	757	
Average		761	784	794	780	
Ammunition Code: M2 fired in M1 weapons.						
1	301	747	768	789	768	
1	302	714	720	758	731	
1	303	740	764	791	765	
1	304	755	778	808	780	
1	305	738	749	770	752	
1	306	749	758	786	764	
2	307	673	695	741	703	
3	308	765	801	806	791	
2	309	716	744	765	742	
2	310	765	791	806	787	
3	311	714	755	768	746	
2	312	829	838	851	839	
2	319	719	731	755	735	
Average		740	761	784	762	

R-Code	Weapon Test No.	20-Rd Cyclic Rate, rd/min				Avg	Remarks
		1	2	3			
Ammunition Code: M1 fired in M2 weapons.							
1	321	783	816	838	812		
1	322	753	794	825	791		
1	323	755	755	762	757		
1	324	744	765	780	763	1-FJ 17 of third magazine, refired.	
1	325	755	788	799	781		
1	326	818	815	829	821		
2	327	781	799	808	796		
3	328	791	783	808	794		
2	329	816	822	829	822		
2	330	768	773	791	777		
3	331	768	775	767	770		
2	332	727	776	804	769		
2	339	727	733	740	733		
Average		768	784	798	784		
Ammunition Code: M2 fired in M2 weapons.							
1	321	753	808	842	801		
1	322	759	794	815	789		
1	323	724	772	784	760		
1	324	722	765	778	755	1-FJ 14 of second magazine, refired.	
1	325	756	788	804	783		
1	326	794	808	832	811		
2	327	775	798	811	795		
3	328	750	776	801	776		
2	329	765	793	808	798		
2	330	708	755	750	738		
3	331	755	756	775	762		
2	332	750	781	822	784		
2	339	744	744	762	750		
Average		750	780	799	776		

R-Code	Weapon Test No.	20-Rd Cyclic Rate, rd/min				Remarks
		1	2	3	Avg	
Ammunition Code:		M2 fired in M1 weapons.				
1	401	784	773	781	779	
1	402	855	844	871	857	1-FX 1 of first magazine. Missing extractor spring. New part installed.
1	403	768	768	786	774	
1	404	781	780	788	783	
1	405	794	813	802	803	
1	406	816	834	845	832	
2	407	770	781	799	783	
3	408	838	730	756	775	
2	409	811	818	842	824	1-FX 1 of first magazine (same as for 402); refired. 1-FJ 18 and 1-FJ 14 on magazine 2 and 3, refired.
2	410	825	834	851	837	
3	411	744	762	773	760	
2	412	815	822	851	829	
3	419	726	744	734	735	
Average		794	793	806	798	

R-Code	Weapon Test No.	20-Rd Cyclic Rate, rd/min				Remarks
		1	2	3	Avg	
Ammunition Code: M1 fired in M2 weapons.						
1	421	755	762	780	766	
1	422	849	867	893	870	
1	423	768	784	788	780	
1	424	744	749	778	757	
1	425	786	798	813	799	
1	426	744	744	747	745	
2	427	791	791	816	799	
3	428	737	730	753	740	
2	429	698	704	720	707	
2	430	781	792	806	793	
3	431	718	706	696	707	
2	432	764	768	770	767	
3	439	791	802	815	803	
Average		764	769	783	772	
Ammunition Code: M2 fired in M2 weapons.						
1	421	765	786	796	782	
1	422	832	855	883	857	
1	423	784	775	781	780	
1	424	741	746	770	752	
1	425	780	798	825	801	
1	426	756	759	772	762	
2	427	780	789	799	789	
3	428	733	740	772	748	
2	429	724	726	730	727	
2	430	799	799	809	802	
3	431	674	695	734	701	
2	432	750	753	780	761	
3	439	783	788	823	798	
Average		762	770	790	774	

Summary of 20-Round Cyclic Rate Data

	20-Rd Cyclic Rate, rd/min			
	<u>1</u>	<u>2</u>	<u>3</u>	<u>Avg</u>
Code M1 ammunition and weapons, avg				779
Code M1 ammunition, Code M2 weapons, avg				775
Code M1 ammunition, Code M1 and M2 weapons, avg	766	777	786	777
Code M2 ammunition and weapons, avg				770
Code M2 ammunition, Code M1 weapons, avg				774
Code M2 ammunition, Code M1 and M2 weapons, avg	754	772	793	772

R-Code	Weapon Test No.	20-Rd Cyclic Rate, rd/min				Function Performance
		1	2	3	Avg	
Ammunition Code: M1.						
1	101	889	915	926	910	
1	102	840	857	865	854	1-FJ 20 of first magazine.
1	103	857	813	773	814	
1	104	879	915	900	898	
1	105	904	937	924	922	
1	106	849	853	867	856	
2	107	844	847	861	851	
3	108	844	840	823	836	1-FJ 12 of first magazine, refired.
2	109	863	853	857	858	
2	110	881	877	869	876	
3	111	883	887	887	886	
2	112	857	863	855	858	
1	119	853	853	840	849	
Average		865	870	865	867	
Ammunition Code: M1.						
1	201	900	881	885	889	1-FJ 8 of first magazine, refired.
1	202	840	832	829	834	First trial was 550, 579, 584 (average 571). Abnormal rates due to broken carrier key screw; part repaired.
1	203	840	831	827	833	
1	204	845	829	822	832	
1	205	871	897	893	887	
1	206	849	863	844	852	1-DF 18/19 of first magazine, refired.
2	207	863	853	863	860	
3	208	808	786	791	795	
2	209	867	853	849	856	
2	210	851	861	863	858	1-DF 18/19 of first magazine, refired.
3	211	879	869	891	880	
2	212	857	869	889	872	
1	219	867	859	845	857	
Average		857	853	853	854	

R-Code	Weapon Test No.	20-Rd Cyclic Rate, rd/min				Function Performance
		1	2	3	Avg	
Ammunition Code: M1.						
1	301	867	871	863	867	
1	302	813	822	823	819	
1	303	853	857	836	849	
1	304	873	919	949	914	1-FJ 14 of first magazine, refired.
1	305	853	867	861	860	
1	306	827	840	840	836	
2	307	813	816	816	815	
3	308	897	908	908	904	
2	309	867	838	838	848	
2	310	877	871	881	876	
3	311	831	813	823	822	
2	312	863	879	900	881	
2	319	844	851	893	863	
Average		852	858	864	858	
Ammunition Code: M1.						
1	401	844	818	825	829	
1	402	883	881	908	891	1-FJ 17 of first magazine, refired.
1	403	877	902	910	896	1-FJ 20 of second magazine.
1	404	820	815	796	810	
1	405	844	863	867	858	
1	406	908	944	947	933	
2	407	883	917	851	884	
3	408	802	808	802	804	
2	409	853	844	834	844	
2	410	871	865	881	872	
3	411	851	861	827	846	Refired first 20 rounds, recorder not on.
2	412	919	910	904	911	
3	419	794	775	775	781	
Average		858	862	856	858	
Average (M1 Ammo)		858	860	860	859	

R-Code	Weapon Test No.	20-Rd Cyclic Rate, rd/min				Function Performance
		1	2	3	Avg	
Ammunition Code: M2.						
1	121	801	822	808	810	
1	122	811	808	838	819	1-FJ 12 of third magazine, refired.
1	123	791	820	825	812	
1	124	825	836	845	835	
1	125	887	930	930	916	First six magazines produced 4-FJ's. Replaced ejector spring which was set 1/10-inch in length.
1	126	798	823	831	817	
2	127	834	847	851	844	
3	128	815	811	847	824	
2	129	831	840	860	844	
2	130	869	891	891	884	
3	131	825	851	863	846	
2	132	831	855	889	858	
1	139	784	811	798	798	
Average		823	842	852	839	
Ammunition Code: M2.						
1	221	759	762	778	766	
1	222	818	829	863	837	
1	223	847	885	902	878	
1	224	849	853	879	860	
1	225	840	853	865	853	
1	226	808	861	879	849	
2	227	832	877	908	872	
3	228	811	808	847	822	
2	229	788	801	804	798	
2	230	815	842	857	838	
3	231	780	801	798	793	
2	232	832	844	855	844	
1	239	761	791	801	784	
Average		811	831	849	831	

R-Code	Weapon Test No.	20-Rd Cyclic Rate, rd/min				Avg	Function Performance
		1	2	3			
Ammunition Code: M2.							
1	321	863	904	887	885	1-FC-DR 18 of third magazine, refired.	
1	322	836	867	895	866		
1	323	851	883	904	879	1-FJ 8 of first magazine, refired.	
1	324	829	832	842	834		
1	325	829	840	844	838		
1	326	863	904	908	892		
2	327	845	863	849	852		
3	328	845	879	904	876		
2	329	844	883	900	876		
2	330	791	788	791	790		
3	331	818	820	836	825		
2	332	825	883	883	864		
2	339	825	859	877	854		
Average		836	862	871	856		
Ammunition Code: M2.							
1	421	772	802	834	803		
1	422	895	919	930	915		
1	423	944	887	867	866		
1	424	791	813	829	811		
1	425	844	871	895	870		
1	426	818	818	815	817		
2	427	829	904	873	869		
3	428	791	798	798	796		
2	429	772	762	759	764		
2	430	844	857	881	861		
3	431	775	788	756	773		
2	432	842	863	877	861		
3	439	849	893	897	880		
Average		820	844	847	837		
Average (M2 Ammo)		823	845	855	841		

R-Code	Weapon Test No.	20-Rd Cyclic Rate, rd/min				Function Performance
		1	2	3	Avg	
Ammunition Code: M3.						
1	141	683	710	750	714	
1	142	770	802	829	800	
1	143	738	755	788	760	
1	144	765	818	855	813	
1	145	724	781	813	773	
1	146	744	783	820	782	
2	147	747	792	827	789	
3	148	686	686	710	694	1-FBR 20 of first magazine.
2	149	764	791	834	796	
2	150	673	719	794	729	
3	151	747	776	820	781	
2	152	590	627	685	634	
1	159	758	791	799	783	
Average		722	756	794	758	
Ammunition Code: M3.						
1	241	743	744	767	751	
1	242	722	733	756	737	
1	243	684	657	695	679	
1	244	711	744	759	738	
1	245	641	600	654	632	First trial resulted in a rate of 548 (first mag) and second trial short recoil with remainder. Loose carrier key tightened.
1	246	694	685	719	699	
2	247	775	775	778	776	
3	248	740	752	772	755	
2	249	733	778	798	770	
2	250	690	718	762	723	
3	251	741	772	791	768	
2	252	746	772	786	768	
1	259	752	788	809	783	
Average		721	732	757	737	

R-Code	Weapon Test No.	20-Rd Cyclic Rate, rd/min				Function Performance
		1	2	3	Avg	
Ammunition Code: M3.						
1	341	711	722	765	733	
1	342	690	727	772	730	
1	343	712	749	778	746	
1	344	738	759	786	761	
1	345	723	758	791	757	
1	346	786	792	827	802	
2	347	736	759	789	761	
3	348	703	733	775	737	
2	349	730	753	765	749	
2	350	738	744	770	751	
3	351	729	755	794	759	
2	352	770	780	804	785	
2	359	764	791	815	790	
Average		733	756	787	759	
Ammunition Code: M3.						
1	441	609	649	727	662	
1	442	722	738	767	742	
1	443	792	816	844	817	
1	444	710	731	761	734	
1	445	730	772	789	764	
1	446	744	788	775	769	1-DF 18/19 of first magazine, refired.
2	447	788	820	840	816	
3	448	756	786	815	786	
2	449	770	783	806	786	
2	450	723	759	792	758	
3	451	733	759	798	763	
2	452	781	806	823	803	
3	459	677	683	724	695	
Average		733	761	789	761	
Average (M3 Ammo)		727	751	782	754	

R-Code	Weapon Test No.	20-Rd Cyclic Rate, rd/min				Avg	Function Performance
		1	2	3			
Ammunition Code: M4.							
1	161	719	756	799	758		
1	162	643	581	626	617		
1	163	632	659	711	667		
1	164	657	640	633	643		
1	165	690	716	755	720		
1	166	716	704	712	711		
2	167	759	802	844	802		
3	168	706	693	738	712	2-FBR 20 (second and third magazine).	
2	169	794	838	873	835		
2	170	647	723	758	709		
3	171	683	711	741	712		
2	172	659	621	700	660		
1	179	677	703	729	703		
Average		691	704	740	711		
Ammunition Code: M4.							
1	261	784	804	825	804		
1	262	723	734	761	739		
1	263	747	764	792	768		
1	264	607	622	667	632		
1	265	690	736	767	731		
1	266	734	738	759	744	1-FBR 20 of third magazine.	
2	267	708	726	765	733		
3	268	671	684	716	690		
2	269	621	574	638	611		
2	270	641	660	700	667		
3	271	650	672	667	663		
2	272	637	667	667	657	1-FFR 8 of first magazine. No flash hole in case. Caused rim shear; refired.	
1	279	699	726	775	733	1-FBR 20 of second magazine.	
Average		686	701	734	706		

R-Code	Weapon Test No.	20-Rd Cyclic Rate, rd/min				Avg	Function Performance
		1	2	3			
Ammunition Code: M4.							
1	361	764	791	809	788		
1	362	679	707	752	713		
1	363	724	786	815	775		
1	364	767	788	794	783		
1	365	750	778	791	773		
1	366	730	738	759	742		
2	367	602	696	733	677		
3	368	690	720	765	725		
2	369	724	752	792	756		
2	370	684	730	767	727		
3	371	744	741	786	757		1-FBR 20 of first magazine.
2	372	765	786	816	789		
1	379	746	730	749	742		
Average		721	749	779	750		
Ammunition Code: M4.							
1	461	612	667	704	661		
1	462	694	729	783	735		
1	463	659	679	716	685		
1	464	675	706	758	713		1-FBR 20, 1-FS 1 of second and third magazines, respectively.
1	465	630	675	706	670		1-FBR 20 of third magazine.
1	466	683	723	775	727		1-FS 1 of third magazine.
2	467	695	731	752	726		
3	468	711	737	756	735		1-FBR 20 of second magazine.
2	469	694	718	744	719		
2	470	729	773	802	768		
3	471	756	772	808	779		
2	472	734	768	786	763		1-FBR 20 of second magazine.
1	479	699	724	758	727		
Average		690	723	758	724		
Average (M4 Ammo) AVE		697	719	753	723		

R-Code	Weapon Test No.	20-Rd Cyclic Rate, rd/min				Function Performance
		1	2	3	Avg	
Ammunition Code: M1.						
3	501	838	844	861	848	
3	508	840	877	889	869	
3	509	820	825	836	827	
3	517	-	-	-	-	Refer to inspection data.
3	518	818	825	832	825	
3	520	836	867	875	859	
3	521	820	851	851	841	
3	537	775	796	808	793	
3	543	796	815	829	813	
Average		818	838	848	834	
Ammunition Code: M1.						
2	601	808	825	834	822	
2	605	741	775	802	773	
2	612	855	861	879	865	
2	614	842	859	867	856	
2	616	818	792	788	799	
Average		813	822	834	823	
Ammunition Code: M1.						
1	705	794	798	825	795	1-Stub 1 of second magazine.
1	709	767	775	794	779	
1	717	788	838	871	832	
1	728	775	791	802	789	
1	729	823	825	829	826	
1	730	825	863	857	848	
Average		795	815	830	813	
Average (M1 Ammo)		809	826	838	825	

R-Code	Weapon Test No.	20-Rd Cyclic Rate, rd/min				Function Performance
		1	2	3	Avg	
Ammunition Code: M2.						
3	502	792	836	865	831	
3	507	804	808	829	814	1-FBR first magazine.
3	510	770	775	789	778	1-FBR second magazine.
3	514	865	885	889	880	1-FBR second magazine.
3	524	749	799	811	786	2-FBR (second and third magazines).
3	527	765	813	827	802	
3	529	755	789	808	784	
3	530	733	768	781	761	
3	540	775	789	822	795	
Average		779	807	825	803	
Ammunition Code: M2.						
2	602	834	844	813	830	
2	606	-	-	-	-	Refer to inspection data.
2	609	786	802	834	807	
2	613	838	855	873	855	
2	617	798	801	811	803	
2	622	818	823	825	822	
Average		815	825	831	824	
Ammunition Code: M2.						
1	702	829	808	842	826	
1	703	791	789	820	800	
1	706	773	788	799	787	
1	710	686	704	720	697	1-FBR second magazine.
1	718	773	802	823	799	1-BOB during second magazine; refired.
1	721	723	747	741	737	
1	724	726	756	755	746	
1	727	762	792	770	775	
Average		758	773	784	771	
Average (M2 Ammo)		779	799	811	796	

R-Code	Weapon Test No.	20-Rd Cyclic Rate, rd/min				Function Performance
		1	2	3	Avg	
Ammunition Code: M3.						
3	503	684	666	695	682	
3	512	652	677	740	690	
3	513	765	778	786	776	
3	532	710	719	756	728	
3	535	703	708	727	713	
3	538	727	743	750	740	
3	542	706	707	746	720	
Average		707	714	743	721	
Ammunition Code: M3.						
2	603	764	775	792	777	
2	607	702	716	761	726	1-BOB during third magazine; refired.
2	611	727	743	762	744	
2	615	740	723	755	739	
2	619	756	756	753	755	
Average		738	743	765	748	
Ammunition Code: M3.						
1	707	784	775	791	783	
1	715	562	583	664	603	
1	716	737	756	764	752	
1	722	636	658	683	659	
1	725	691	729	730	717	
1	731	690	707	731	709	
Average		683	701	727	704	
Average (M3 Ammo)		708	718	744	723	

R-Code	Weapon Test No.	20-Rd Cyclic Rate, rd/min				Avg	Function Performance
		1	2	3			
Ammunition Code: M4.							
3	505	723	736	780	746		
3	511	741	773	783	766		
3	515	690	716	756	721		
3	522	733	716	714	721		
3	523	747	720	749	739	1-FBR second magazine.	
3	525	752	707	727	729		
3	526	675	710	765	717		
3	539	698	680	716	698		
3	544	664	654	706	675		
3	545	730	755	783	756		
Average		715	717	748	727		
Ammunition Code: M4.							
2	604	767	772	794	778		
2	618	749	700	704	718		
Average		758	736	749	748		
Ammunition Code: M4.							
1	704	714	689	715	706		
1	708	643	678	703	675	1-FBR2 first magazine. Trip sear inoperative. Replaced part and refired test. (Refer to inspection data).	
1	712	726	744	750	740		
1	714	773	767	775	772		
1	720	684	722	722	709		
1	723	647	622	696	655	1-FS 1 second magazine.	
Average		698	704	727	709		
Average (M4 Ammo)		714	714	741	723		

<u>R-Code</u>	<u>Weapon Test No.</u>	<u>20-Rd Cyclic Rate, rd/min</u>				<u>Function Performance</u>
		<u>1</u>	<u>2</u>	<u>3</u>	<u>Avg</u>	
Ammunition Code: M3, fired in M1 weapons.						
	103	755	722	710	729	
	105	808	789	792	796	
	201	780	773	773	775	
	208	691	665	688	681	
	304	764	762	776	767	
	307	680	619	690	663	
	406	813	808	804	808	
	408	702	714	724	713	
	412	801	791	849	814	
	419	660	590	593	614	Refer to inspection data.
	Average	745	723	740	736	

Ammunition Code: M4, fired in M2 weapons.

	130	781	765	775	774	
	139	686	656	659	667	
	221	529	581	640	583	Refer to inspection data.
	223	772	767	758	766	
	227	737	715	733	728	
	326	783	773	772	776	
	330	690	660	667	672	
	422	823	815	806	815	
	429	688	652	643	661	
	431	602	545	547	565	Refer to inspection data. 1- BOB during second magazine; refired.
	Average	709	693	700	701	

R-Code	Weapon Test No.	20-Rd Cyclic Rate, rd/min				Function Performance
		<u>1</u>	<u>2</u>	<u>3</u>	<u>Avg</u>	
Ammunition Code:		M1, fired in M3 weapons.				
	144	881	902	906	896	
	152	775	808	804	796	
	243	781	759	775	772	
	259	822	838	849	836	
	342	804	822	831	819	
	346	853	879	889	874	
	441	758	768	776	767	
	443	838	855	881	858	2-DF 18/19 (second and third magazines) refired.
	447	865	871	887	874	
	459	768	775	784	776	
	Average	814	828	838	827	

Ammunition Code: M2, fired in M4 weapons.

	162	707	720	756	728
	169	885	917	924	909
	261	802	822	863	829
	269	743	775	786	768
	367	752	783	802	779
	372	811	829	853	831
	461	718	741	765	741
	463	752	743	755	750
	468	772	811	806	796
	471	802	825	869	832
	Average	774	797	818	796

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BT

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FROM CSX-2/5

WSEG PANAMA TEST-M16A1 RIFLE

A. TELECOM LTCOL SLOAN DIV G-4 AND MAJ LABAS CSX 15FEB68

B. PROJ MGR RIFLES USAMC 132130Z FEB 68 NOTAL

C. MY 112252Z DEC67 NOTAL

D. MY 121842Z DEC67 NOTAL

E. YR 122300Z FEB68 NOTAL

1. REF A RELATES. REQUEST YOU TAKE REF B PASEP FOR ACTION.
2. RECORDS THIS HQTRS INDICATE QTY 307 M16A1 RIFLES PROVIDED FOR SUBJ TEST. ACCORDINGLY, REQ YOU SHIP QTY 307 RIFLES ILO 309 CITED REF B.
3. RECORDS FURTHER INDICATE FOL AMMO AVAIL IN LOTS CITED REF B:

LOT NUMBER	QTY OH CAMLEJ
IMR } RA5287 { B211	27,000
LC12245	26,880
LC 12229	33,600
RW18179	29,520

IMR

REQ YOU SHIP AMMO INDICATED ABOVE.

4. INDDITION TO RIFLES AND AMMO, REQ YOU SHIP QTY 15,000 M16A1 RIFLE MAGAZINES. FURTHER REQ THAT SREV MAGAZINES BE BOXED SEPARATELY ND APPROPRIATELY MARKED.
5. ALL COSTS INCIDENT TO THIS SHPMENT CHAEGEABLE TO APPN DATA CITED IN FRE C AND D.
6. AS DISCUSSED DURING REF A, THIS COMSTITUTES REPLY TO REF E.
7. DISPOSITION OF BALANCE OF MATL UTILIZED DUR SUBJ TEST WILL BE THE SUBJ OF SEP CORRES.

BT

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1. request 309 rifles M16A1, and 116,000 rds of 5.56 MM
AMMUNITION, 29,000 RDS FROM EACH LOT NUMBER RAS287, LC12245, LC12229,
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