U.S. ARMY COMBAT SYSTEMS TEST ACTIVITY
ABERDEEN PROVING GROUND, MARYLAND 21005-5059
FIRING RECORD

23 June 1987

TECOM Project No. 2-WE-600-004-001,
Special Study; XM4 5.56-MM Carbine
Safety Qualification

Firing Record No.: S-51042
Dates of Test: May 1986 to May 1987
Authority: Letter, TECOM, AMSTE-TE-F,
17 December 1985

W.O. No. 330-32740-30 ar

ITEMS UNDER TEST

Carbine, Caliber 5.56-mm, XM4:

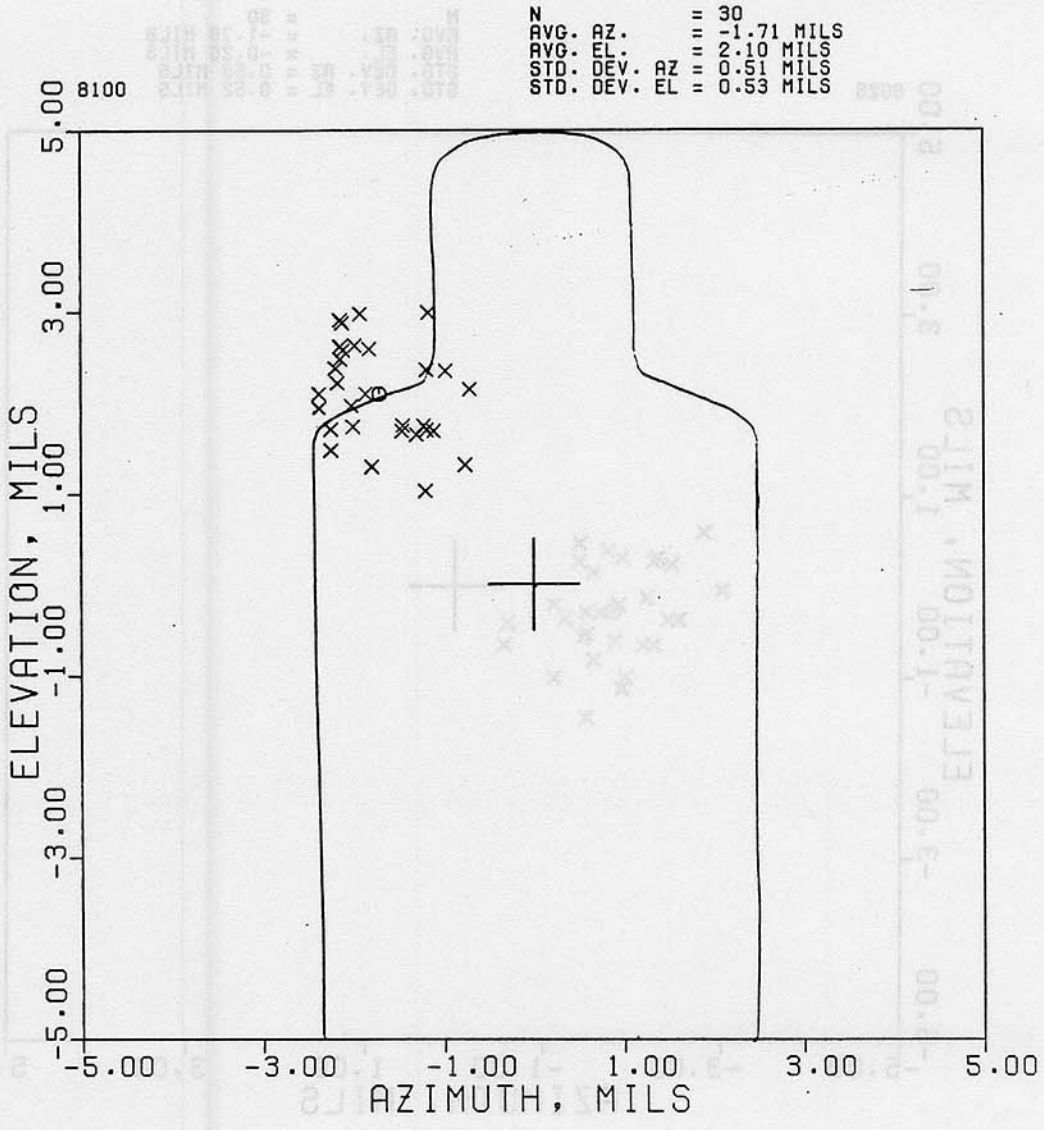
SN	Test No.	SN	Test No.
6153601	1	6153622	9
6153603	2	6153625	10
6153605	3	6153627	11
6153609	4	6153631	12
6153611	5	6153635	13
6153613	6	6153637	14
6153615	7	6153639	15
6153619	8	6153641	16

SUPPORTING FACILITIES AND MATERIALS

Ammunition:

Cartridge, 5.56-mm ball, M855, lot No. WCC85L030-039.
Cartridge, 5.56-mm tracer, M856, lot No. FNB84E003-011.
Cartridge, 5.56-mm ball, M193, lot No. LC83K002-212.
Cartridge, 5.56-mm, tracer, M196, lot No. LC81M010G-001.
Cartridge, 5.56-mm, blank, M200, lot No. LC81F021052.

The use of trade names in this firing record does not constitute an official endorsement or approval of the use of such commercial hardware or software. This firing record may not be cited for purposes of advertisement.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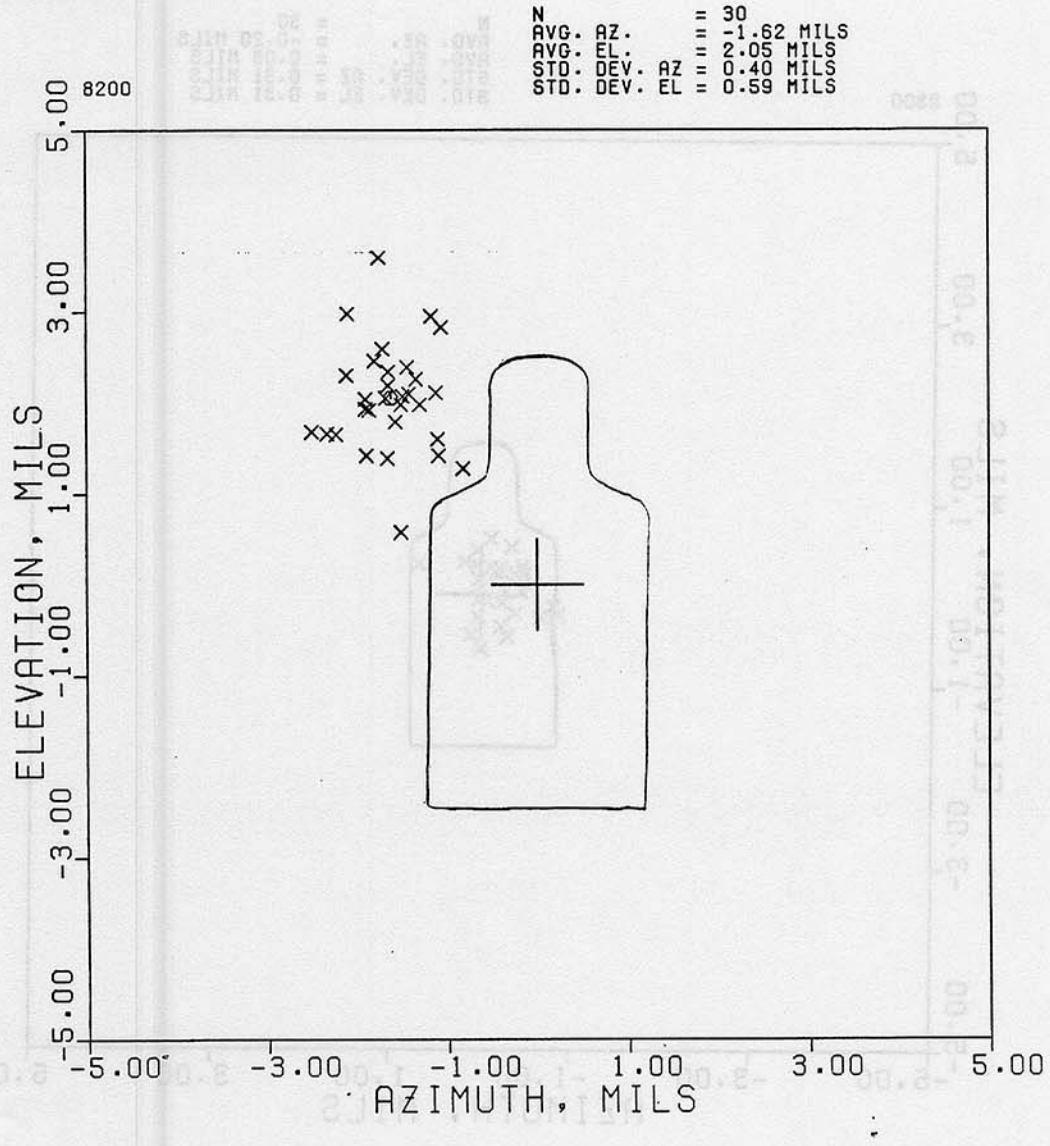
AVG. EL. = 2.10 MILS
STD. DEV. AZ = 0.51 MILS
STD. DEV. EL = 0.53 MILS
8100
ELEVATION, MILS
AZIMUTH, MILS
5.00
3.00
1.00
-1.00
-3.00
-5.00
-5.00
-3.00
-1.00
1.00
3.00
5.00

Figure 5.22.


N = 30
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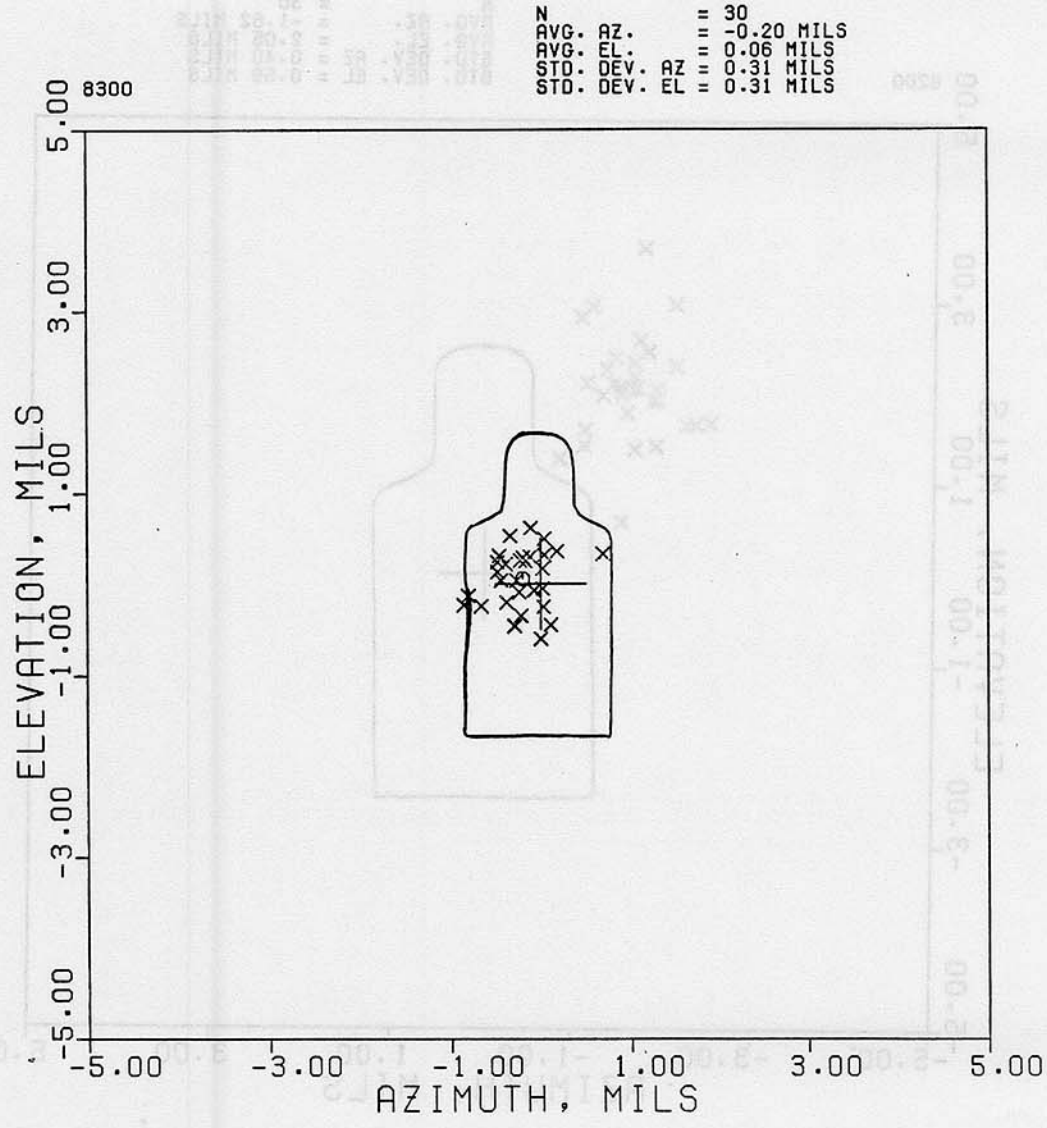
STD. DEV. EL = 0.59 MILS
8200
ELEVATION, MILS
5.00
3.00
1.00
-1.00
-3.00
-5.00
-5.00
-3.00
-1.00
1.00
3.00
5.00
AZIMUTH, MILS

Figure 5.23.


N = 30
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AVG. EL. = 0.06 MILS
STD. DEV. AZ = 0.31 MILS
STD. DEV. EL = 0.31 MILS
8300
5.00
3.00
1.00
-1.00
-3.00
-5.00
ELEVATION, MILS
-5.00
-3.00
-1.00
1.00
3.00
5.00
AZIMUTH, MILS

Figure 5.24.

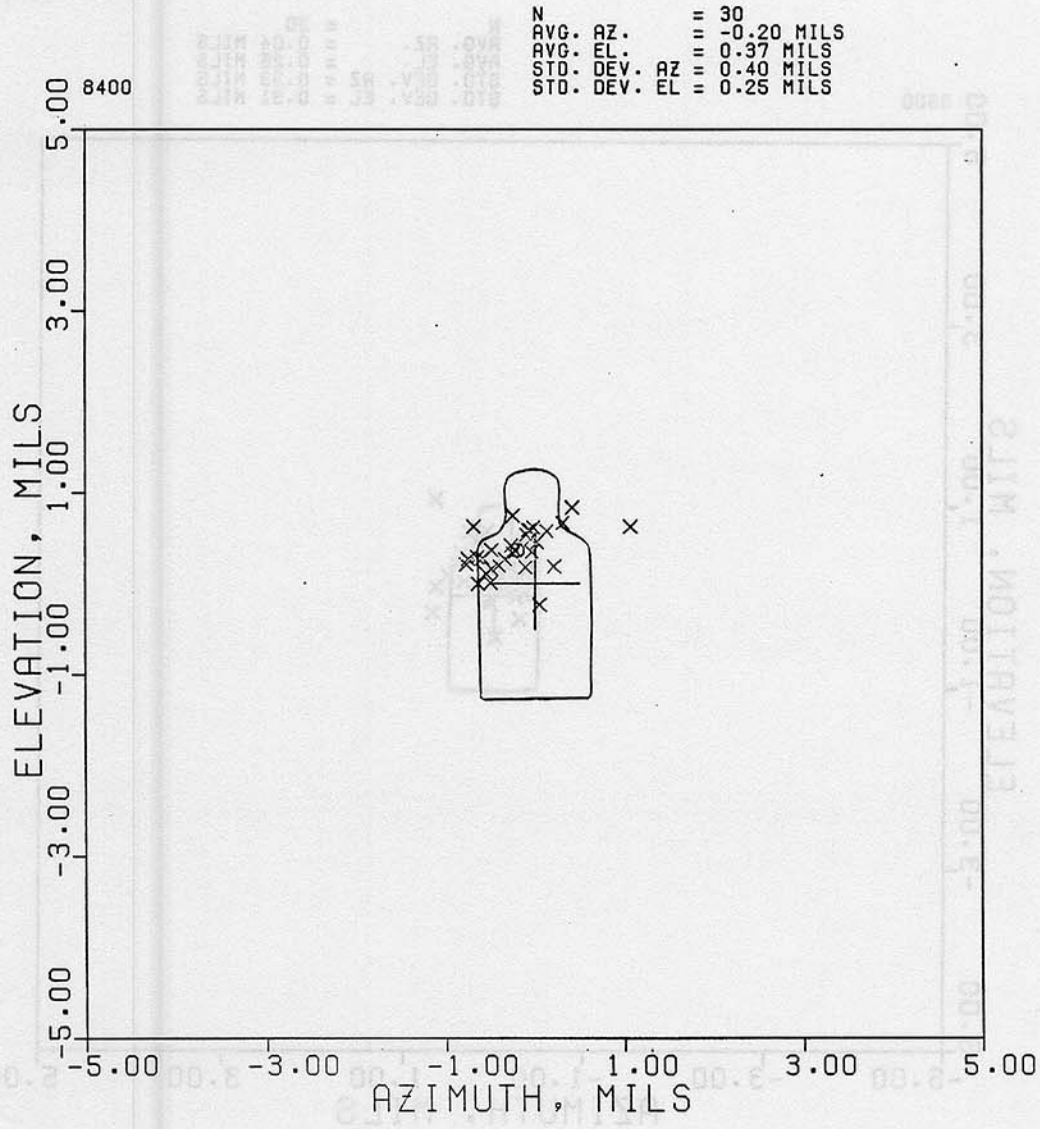

N = 30
AVG. AZ. = -0.20 MILS
AVG. EL. = 0.37 MILS
STD. DEV. AZ = 0.40 MILS
STD. DEV. EL = 0.25 MILS
8400
5.00
3.00
1.00
-1.00
-3.00
-5.00
ELEVATION, MILS
-5.00
-3.00
-1.00
1.00
3.00
5.00
AZIMUTH, MILS

Figure 5.25.

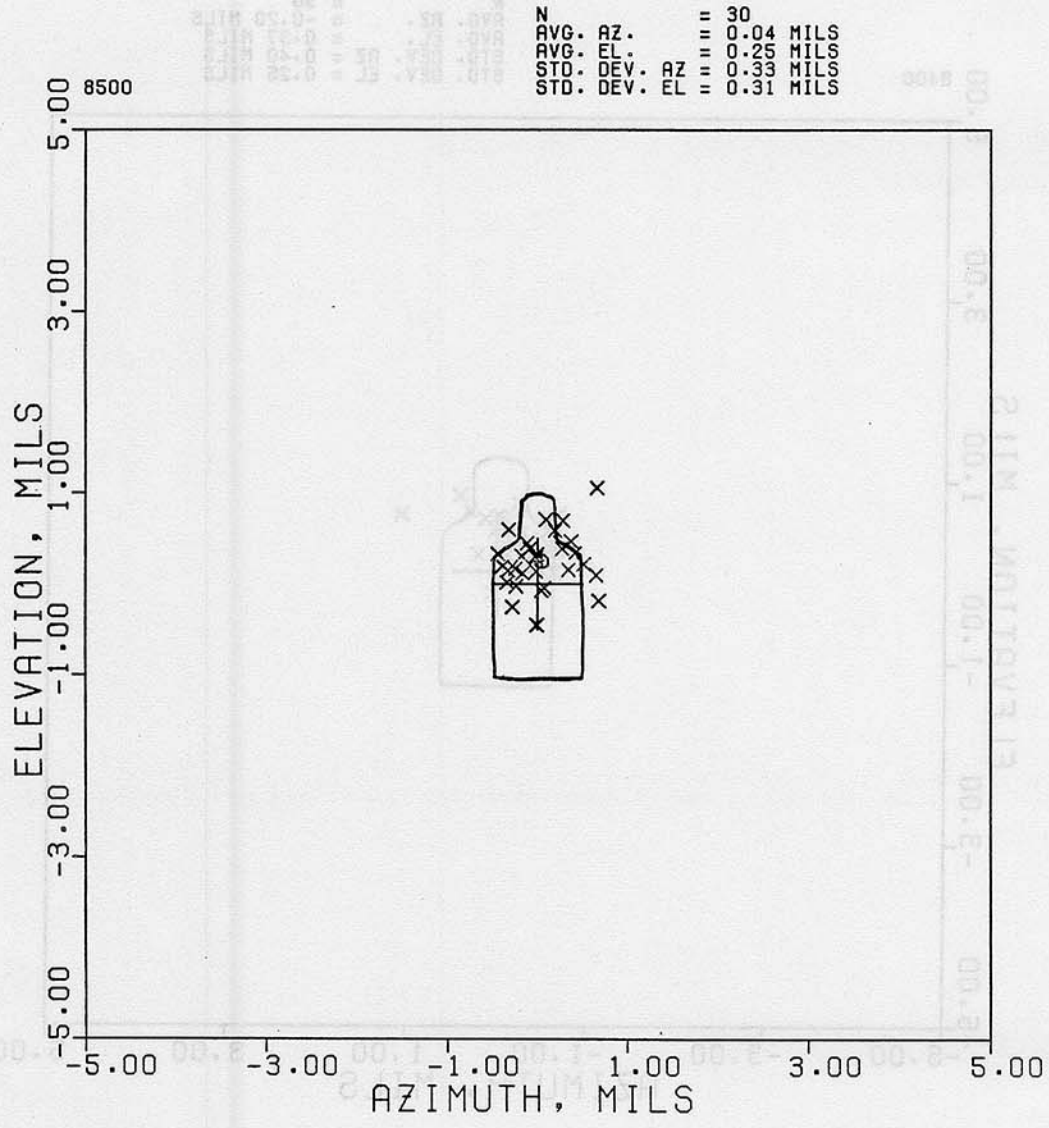
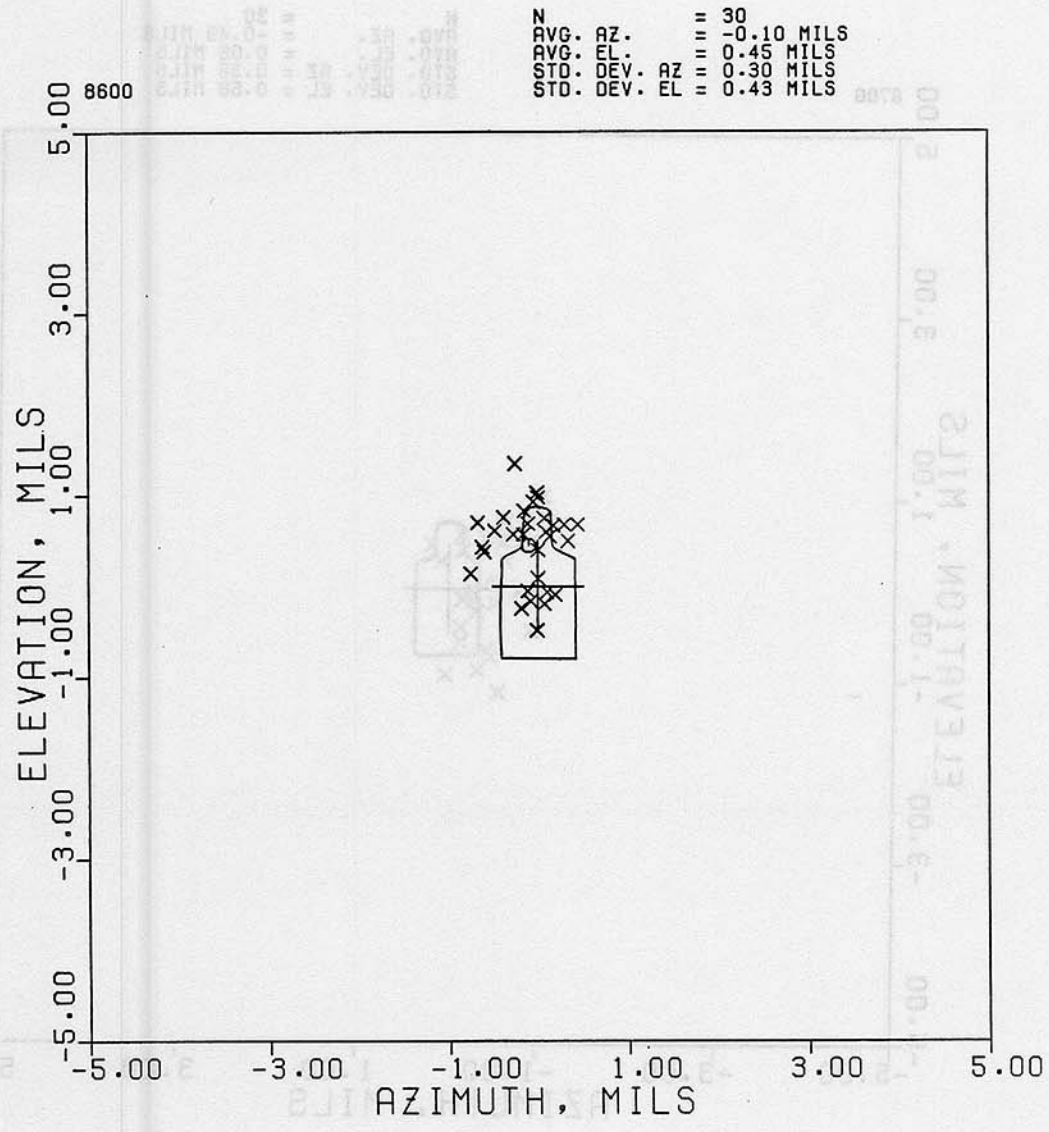

N = 30
AVG. AZ. = 0.04 MILS
AVG. EL. = 0.25 MILS
STD. DEV. AZ = 0.33 MILS
STD. DEV. EL = 0.31 MILS
8500
ELEVATION, MILS
5.00
3.00
1.00
-1.00
-3.00
-5.00
-5.00
-3.00
-1.00
1.00
3.00
5.00
AZIMUTH, MILS

Figure 5.26.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AVG. EL. = 0.45 MILS
STD. DEV. AZ = 0.30 MILS
STD. DEV. EL = 0.43 MILS
8600
5.00
3.00
1.00
-1.00
-3.00
-5.00
ELEVATION, MILS
-5.00
-3.00
-1.00
1.00
3.00
5.00
AZIMUTH, MILS

Figure 5.27.

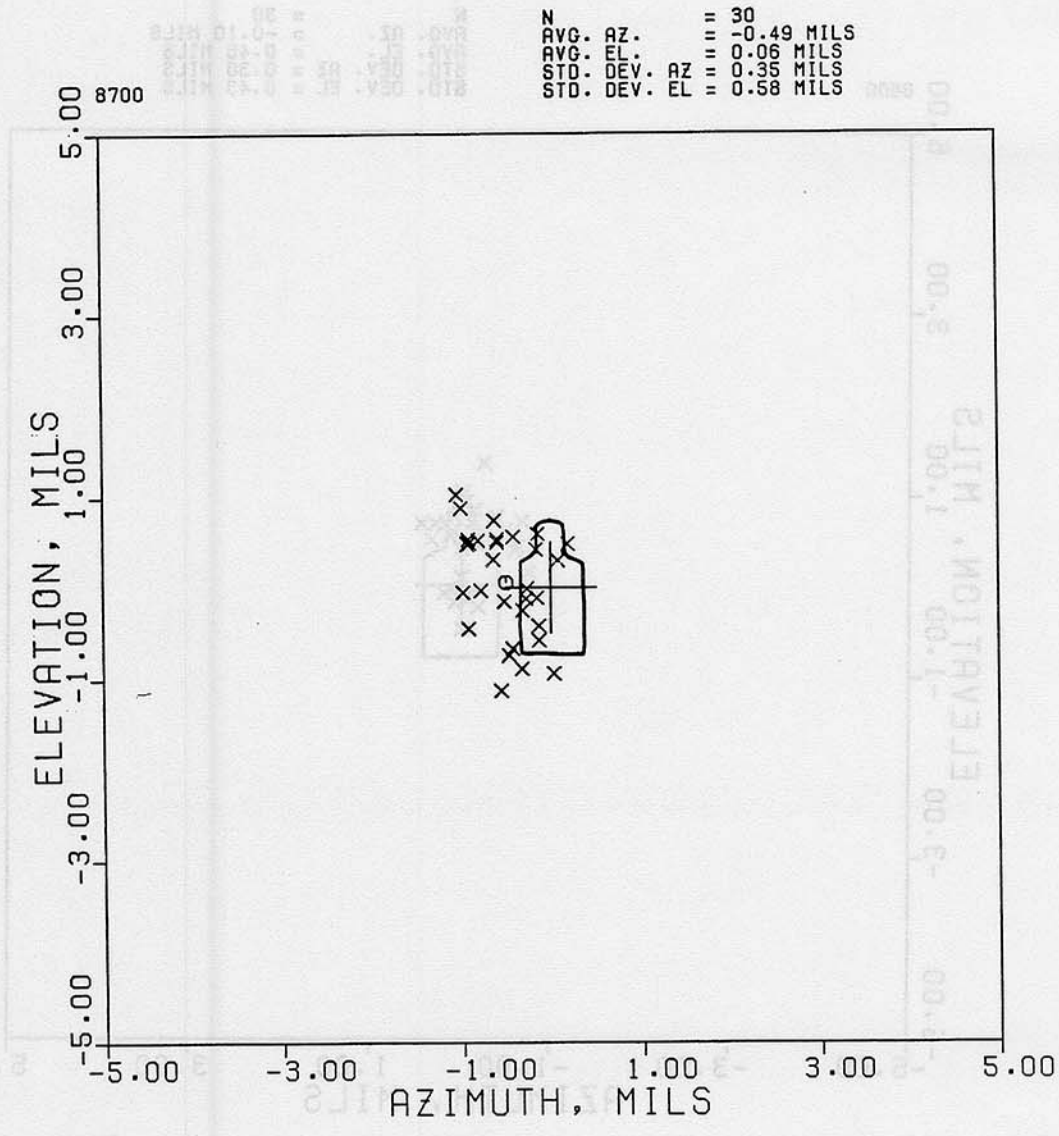
N = 30
AVG. AZ. = -0.49 MILS
AVG. EL. = 0.06 MILS
STD. DEV. AZ = 0.35 MILS
STD. DEV. EL = 0.58 MILS
8700
5.00
3.00
1.00
-1.00
-3.00
-5.00
ELEVATION, MILS
-5.00
-3.00
-1.00
1.00
3.00
5.00
AZIMUTH, MILS

Figure 5.28.

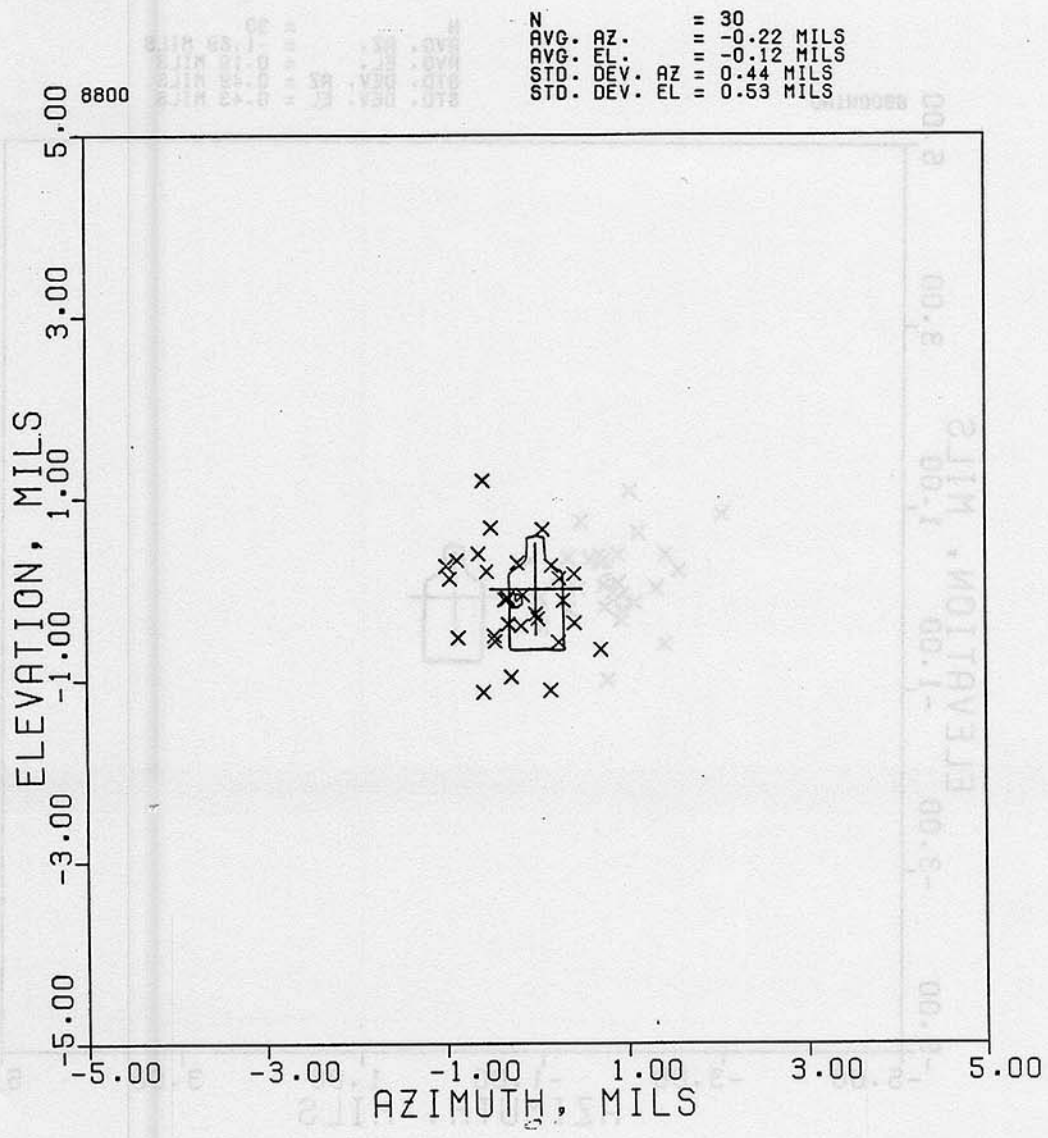
N = 30
AVG. AZ. = -0.22 MILS
AVG. EL. = -0.12 MILS
STD. DEV. AZ = 0.44 MILS
STD. DEV. EL = 0.53 MILS
8800
5.00
3.00
1.00
-1.00
-3.00
-5.00
ELEVATION, MILS
-5.00
-3.00
-1.00
1.00
3.00
5.00
AZIMUTH, MILS

Figure 5.29.

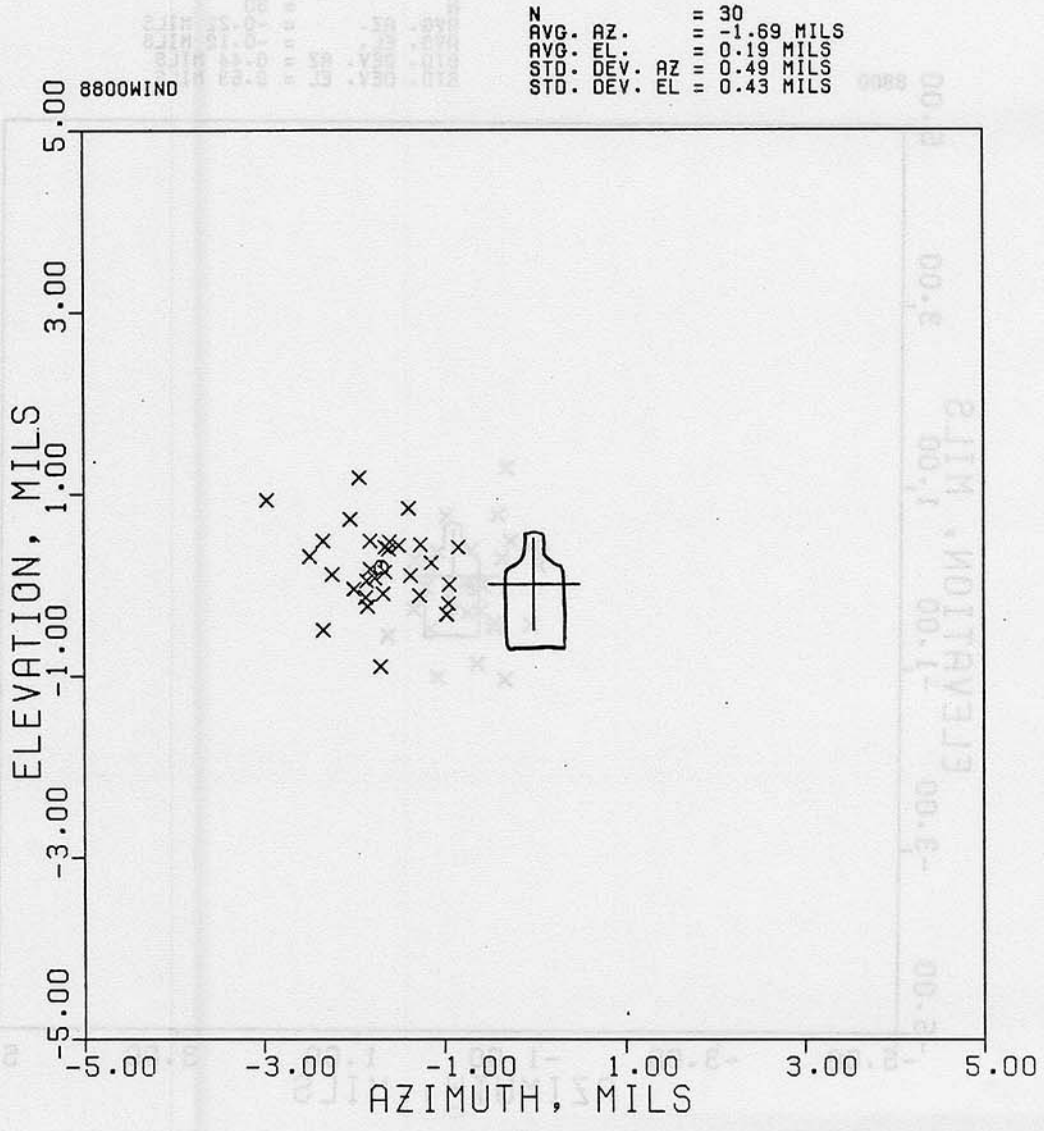
N = 30
AVG. AZ. = -1.69 MILS
AVG. EL. = 0.19 MILS
STD. DEV. AZ = 0.49 MILS
STD. DEV. EL = 0.43 MILS
8800WIND
ELEVATION, MILS
5.00
3.00
1.00
-1.00
-3.00
-5.00
-5.00
-3.00
-1.00
1.00
3.00
5.00
AZIMUTH, MILS

Figure 5.30.

TABLE 5.14. ACCURACY/SIGHT CALIBRATION TEST PROCEDURES

a. The three XM4 carbines used in the accuracy test were zeroed at 25 meters after completion of the initial dispersion test (ref para 2.2a) and function checks (para 2.3). Zeroing consisted of setting the weapon sights according to the applicable TM procedures, followed by firing of at least five rounds at the sight setting. Any adjustments necessary to bring the sights and center-of-impact of the shot group into congruency were then made and recorded. Another 5-round group was then fired. All firing in this test was with the weapon shoulder fired from bench rest.

b. After initial zero at 25 meters, all carbines were fired at 300 meters range with the correct sight adjustment being made for that range. The inaccuracy of the sight setting required re-establishing zero at 300 meters. The 25-meter range was refired wihtout further rezeroing. The remaining ranges (i.e. 100, 200, and 400 to 800 meters in 100-meter intervals) were than fired with appropriate sight adjustment for range only. Three 10-round targets per range were fired.

c. Analysis (reference criterion - none). Fired for information. The data were summarized, by range and weapon, to determine how close the shot group CI was to the aiming point at each range. Estimates of hits on an "E" silhouette target were calculated.

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ENDURANCE

TABLE OF CONTENTS

ENDURANCE

TABLE 6.1. FUNCTIONING PERFORMANCE DATA FOR ENDURANCE TEST OF XM4 CARBINE SN 6153601 (2)

1200 Rd Test Phase	120-Rd Test Cycle	Magazine ID No.	Seq	Rd	TOT Rd	Malfunctions, by Type FFD	FTC	FFR	FEX	FEJ	FBR	OTH	Chg to Wpn	Remarks
I	2	107	2	29	179	BOB							1	
	4	107	4	29	474	BOB								
	6	107	2	29	659	BOB								
	8	108	1	1	841	FS								
	8	107	4	29	959	BOB								
	9	108	4	29	1079	BOB							1	
	10	106	1	1	1081	FS								
					1200									CIL gun.
II	2	107	4	20	1430	BOB								
				29	1439	BOB								
	3	107	3	29	1529	BOB								
		108	4	27	1557	BOB								
	4	107	2	29	1619	BOB								
		105	4	27	1677	BOB							1	
	6	107	4	29	1919	BOB								
	7	107	3	29	2009	BOB								
	8	107	2	29	2099	BOB								
	10	107	4	27	2397	BOB								
				29	2399	BOB								
					2400									Replace Magazine No. 107 with No. 141. CIL guns.
III	1	108	4	26	2516	BOB								27 rounds loaded.
	2	105	4	27	2637	BOB							1	
	6	108	3	29	3089	BOB								
	9	141	3	29	3449	BOB							1	
	10	-	-	-	3600									CIL gun.
IV	6	108	1	29	4229	BOB								
	7	108	4	27	4437	BOB								
	10	-	-	-	4800									CIL gun.
V	10	-	-	-	6000							FRA		Loose carrier key screws tightened. CIL gun.
VI	3	108	4	21	6351	BOB								
	3	108	4	27	6357	BOB								
	4	108	3	22	6442	BOB								
	6	141	4	27	6717	BOB							1	
	7	108	4	25	6835	BOB								
	8	105	4	29	6959	BOB								

TABLE 6.1 (CONT'D)

1200 Rd Test Phase	120-Rd Test Cycle	Magazine ID No.	Seq	Rd	TOT Rd	Malfunctions, by Type FFD	FTC	FFR	FEX	FEJ	FBR	OTH	Chg to Wpn	Remarks
	10	141	4	29	7199 7200	BOB								Replace Magazine No. 108 with No. 141 CIL gun.
VII	2	105	4	29	7439	BOB								
	4	141	4	27	7677	BOB								
	5	144	4	27	7797	BOB							1	
	6	105	4	27	7917	BOB								
	7	105	3	29	8009	BOB								
	8	141	4	27	8157	BOB								
	9	144	4	29	8279	BOB								
	10	105	4	27	8397 8400	BOB								CIL Gun.
VIII	3	144	4	27	8757	BOB								
	4	144	3	29	8849	BOB								
	7	105	1	2	9122			LI						
		144	4	29	9239	BOB								
	9	105	3	27	9447	BOB								
		105	3	30	9450	BOB								
	10	-	-	-	9600									CIL gun.
IX	1	144	4	24	9714	BOB								27 rounds loaded.
	4	-	-	-	10000									CIL gun.
Total						45	0	1	0	0	0	1	7	

[a]After interchange test.

TABLE 6.2. FUNCTIONING PERFORMANCE DATA FOR ENDURANCE TEST OF XM4 CARBINE SN 6153603 (1)

1200 Rd Test Phase	120-Rd Test Cycle	Magazine ID No.	Seq	Rd	TOT Rd	Malfunctions, by Type FFD	FTC	FFR	FEX	FEJ	FBR	OTH	Chg to Wpn	Remarks
I	4	103	4	29	479	BOB							1	
	7	102	4	1	811	FS								
	8	104	1	1	841	FS								
	9	104	4	1	1051	FS								
	10	102	1	1	1081 1200	FS								CIL gun.

TABLE 6.2 (CONT'D)

1200 Rd Test Phase	120-Rd Test Cycle	Magazine ID No.	Seq	Rd	TOT Rd	Malfunctions, by Type FFD	FTC	FFR	FEX	FEJ	FBR	OTH	Chg to Wpn	Remarks
II	1	103	1	29	1262	BOB							1	
	7	103	3	29	2009	BOB								
	10	103	4	29	2339	BOB								
					2400									CIL gun.
III	1	102	2	29	2492	BOB							1	
	2	101	4	25	2635	BOB							1	
	4	102	3	27	2847	BOB							1	
	7	101	3	21	3201	BOB							1	
		102	4	27	3237	BOB							1	
	8	103	4	29	3359	BOB								
	9	103	3	29	3449	BOB								
		104	4	1	3451		FBC							
	10				3600									CIL gun.
IV	1	103	1	29	3662	BOB								
	2	103	4	29	3839	BOB								
	9	102	4	1	4651		FBC							
	10				4800									CIL gun. Replaced Magazine 103 with 142
V	10				6000									CIL gun.
VI	4	104	3	7	6427	X								Broken bolt replaced.
	7	104	4	1	6811		FBC							
	10				7200									CIL gun.
VII	4	142	4	29	7679	BOB							1	
	10				8400									
VIII	10				9600									CIL gun.
IX	4				10000									CIL gun.
Totals						19	3	0	0	0	0	0	8	

[a]After interchange.

TABLE 6.3. FUNCTIONING PERFORMANCE DATA FOR ENDURANCE TEST OF XM4 CARBINE SN 6153619 (5)[a]

1200 Rd Test Phase	120-Rd Test Cycle	Magazine ID No.	Seq	Rd	TOT Rd	Malfunctions, by Type FFD	FTC	FFR	FEX	FEJ	FBR	OTH	Chg to Wpn	Remarks
I	3	119	1	1	241	X								
	7	120	2	1	751	FS								
	8	120	1	2	842	FS								
	10	118	1	29	1109	BOB							1	
	10	119	2	1	1111	FS								
	10	119	2	2	1112	FS								
	10	120	3	1	1141	FS								
	10	117	4	1	1171	FS								
	10	-	-	-	1200									CIL gun.
II	9	119	1	1	2161	FS								
	9	119	1	1	2161					X			1	
	10	120	1	1	2281	FS								
	10	-	-	-	2400									CIL gun.
III	2	119	2	29	2579	BOB							1	
	3	118	4	29	2759	BOB								
	7	118	4	29	3239	BOB								
	8	117	2	1	3271					X			1	
	8	117	2	2	3272					X			1	
	8	117	2	3	3273					X			1	
	9	119	3	29	3449	BOB								
	10	118	1	1	3481					X			1	
	10	-	-	-	3600							FRA		Tightened loose carrier key screws.
IV	1	118	4	26	3716	BOB								
	2	118	3	25	3805			X						
	2	119	4	29	3839	BOB								
	3	118	2	29	3899	BOB								
	7	118	2	29	4379	BOB								
	9	118	4	29	4679	BOB								
	10	-	-	-	4800									CIL gun. Replaced Magazine No. 118 with No. 114.
V	3	119	1	29	5069	BOB								
	5	119	3	29	5369	BOB								
	5	120	4	29	5399	BOB							1	
					6000									CIL gun.
VI	2	119	4	29	6239	BOB								
	7	119	3	29	6809	BOB								
	10	143	3	29	7169	BOB							1	
	10	-	-	-	7200									CIL gun. Replaced magazine No. 119 with No. 145.

TABLE 6.3 (CONT'D)

1200 Rd Test Phase	120-Rd Test Cycle	Magazine ID No.	Seq	Rd	TOT Rd	Malfunctions, by Type FFD	FTC	FFR	FEX	FEJ	FBR	OTH	Chg to Wpn	Remarks
VII	2	117	4	27	7437	BOB							1	
	2	117	4	29	7439	BOB								
	3	117	3	27	7527	BOB								
	3	143	4	27	7557	BOB							1	
	4	145	4	27	7677	BOB							1	
	4	145	4	29	7679	BOB								
	5	145	3	27	7767	BOB								
	5	120	4	11	7781	FS								
	5	120	4	12	7782	DF								
				13	7783									
	6	117	4	27	7917	BOB								
	10	-	-	-	8400									CIL gun.
					9600									CIL gun.
VIII	5	145	1	29	8909	BOB								
	6	117	2	29	9059	BOB								
	8	145	2	29	9299	BOB								
	8	117	4	27	9357	BOB								
	9	145	1	1	9361	FS								
	10	117	2	1	9511	FS								
IX	2	145	2	29	9779	BOB								
	3	145	1	29	9869	BOB								
					10000							FRA		CIL gun. Loose carrier key tightened.
Total						43	0	1	0	5	0	2	12	

[a]After interchange test.

TABLE 6.4. FUNCTIONING PERFORMANCE DATA FOR ENDURANCE TEST OF XM4 CARBINE SN 6153622 (4)a

1200 Rd Test Phase	120-Rd Test Cycle	Magazine ID No.	Seq	Rd	TOT Rd	Malfunctions, by Type FFD	FTC	FFR	FEX	FEJ	FBR	OTH	Chg to Wpn	Remarks
I	3	116	2	1	271					X			1	
	4	113	2	1	391					X				
	6	116	3	1	661					X				
	9	113	1	1	961	FS								
	10	114	1	2	1082	FS								
					1200									CIL gun.
II	1	113	1	14 (1)	1214					X				
	10				2400									CIL gun.

TABLE 6.4 (CONT'D)

1200 Rd Test Phase	120-Rd Test Cycle	Magazine ID No.	Seq	Rd	TOT Rd	Malfunctions, by Type FFD	FTC	FFR	FEX	FEJ	FBR	OTH	Chg to Wpn	Remarks
III	1	115	1	24 (1)	2424					X				
	4	116	1	1	2761					X				
	10				3600									CIL gun.
IV	1	113	1	24	3624					X				
			1	25	3625					X				
	2	115	4	27	3837	BOB							1	
	9	114	4	29	4679	BOB							1	
	10				4800									CIL gun.
V	10				6000									CIL gun.
VI	1	113	1	14	6014					X				
	4	113	4	30	6480	BOB							1	
	10				7200									CIL gun.
VII	1	115	1	1	7201					X				
	1	115	1	11 (1)	7211					X				
	1	115	1	12 (2)	7212					X				
	6	114	1	1	7801					X				
	7	116	2	28	7978	BOB							1	
	9	114	2	9	8199					X				
	9	114	2	10	8200					X				
	10	115	2	1	8311					X				
	10	-	-	-	8400									CIL gun.
VIII	1	113	1	1	8401					X				
	1	113	1	2	8402					X				
	1	116	2	1	8464					X				
	1	116	2	2	8465					X				
	5	116	2	1	8911					X				
	6	113	2	1	9031					X				
	10	116	1	29	9509	BOB							1	
	10	113	2	1	9511	FS								
	10	114	3	1	9541					X				
	10	114	3	2	9542					X				
	10	-	-	-	9600									CIL gun.
IX	1	115	1	1	9601					X				
	1	115	1	11 (1)	9611					X				
	1	115	1	12 (2)	9612					X				
	1	114	2	2	9665					X				
	1	116	4	1	9691					X				
	2	114	1	1	9721					X				
	2	114	1	29	9749	BOB							1	
	3	115	1	1	9841					X				
	4	113	2	1	9991					X				10 round magazine.

TABLE 6.4 (CONT'D)

1200 Rd Test Phase	120-Rd Test Cycle	Magazine ID No.	Seq	Rd	TOT Rd	Malfunctions, by Type FFD	FTC	FFR	FEX	FEJ	FBR	OTH	Chg to Wpn	Remarks
	4	-	-	-	10000							FRA		CIL gun. Tighten loose carrier key.
Total						9	0	0	0	32	0	1	7	
[b]Total					1215	0	0	3	0	0	0	[c]2	0	

[a]After interchange test.
[b]Special retest after tightening carrier key. M855 ctg lot No. WCC 86A030-053 used.
[c]Uncontrolled fire (4-round burst).

TABLE 6.5. FUNCTIONING PERFORMANCE DATA FOR ENDURANCE TEST OF XM4 CARBINE SN 6153625 (3)[a]

1200 Rd Test Phase	120-Rd Test Cycle	Magazine ID No.	Seq	Rd	TOT Rd	Malfunctions, by Type FFD	FTC	FFR	FEX	FEJ	FBR	OTH	Chg to Wpn	Remarks
I	9	109	1	1	961	FS								
	10	110	1	1	1081	FS								
				2	1082	FS								
				3	1083	FS								
				4	1084	FS								
					1200									CIL gun.
II	10				2400									CIL gun.
III	6	112	3	29	3089	BOB							1	
					3600									CIL gun.
IV	4	109	4	30	4080	BOB							1	
	9	110	4	1	4651		FBC							
					4800									CIL gun.
V	10	109	4	27	5997	BOB							1	
					6000							FRA		CIL gun. Removed broken front gas ring on bolt.
VI	10				7200									CIL gun. Installed set of 3 gas rings.
VII	5	109	1	2	7682					X			1	OMF
	5	109	1	3	7683				X					Replaced broken extractor.
	5	112	4	29	7799	BOB							1	
	10	109	4	1	8371		FBC							
					8400									

TABLE 6.5 (CONT'D)

1200 Rd Test Phase	120-Rd Test Cycle	Magazine ID No.	Seq	Rd	TOT Rd	Malfunctions, by Type FFD	FTC	FFR	FEX	FEJ	FBR	OTH	Chg to Wpn	Remarks
VIII	2	111	4	4	8614				X				1	OMF Replaced broken extractor spring.
	3	110	2	27	8697	BOB							1	
	10				9600									CIL gun.
IX	4				10000									CIL gun.
Total						11	2	0	2	1	0	1	7	

[a]After interchange test.

TABLE 6.6. DISPERSION DATA FOR ENDURANCE TEST, MEASURED IN INCHES

TGT NO.	HCI	VCI	HSD	VSD	EHS	EVS	ES	MR	RSD	COV	NO.RDS.
1200603A	3.37	1.94	2.15	1.09	6.60	3.45	7.08	2.03	2.41	-0.90	10
1200603B	3.29	1.78	2.13	1.19	6.15	3.15	6.39	2.13	2.44	0.58	10
1200603C	1.81	1.07	1.41	0.79	3.50	2.20	3.83	1.44	1.62	0.20	10
MEAN	2.82	1.60	1.89	1.02	5.42	2.93	5.76	1.87	2.15	-0.04	
1200601A	2.02	1.84	2.47	1.57	8.30	5.15	8.39	2.32	2.93	-0.59	10
1200601B	2.01	1.55	1.29	0.89	4.40	2.90	4.81	1.28	1.57	-0.79	10
1200601C	2.55	2.03	1.97	1.49	6.10	4.65	6.58	2.12	2.47	0.14	10
MEAN	2.19	1.81	1.91	1.32	6.27	4.23	6.59	1.91	2.32	-0.41	
1200625A	2.37	0.80	1.68	0.86	5.65	2.60	5.72	1.57	1.89	0.27	10
1200625B	1.81	2.33	1.09	1.11	3.60	3.50	4.56	1.29	1.55	0.30	10
1200625C	3.32	4.38	1.83	2.66	6.20	6.85	7.31	2.81	3.23	2.81	10
MEAN	2.50	2.51	1.54	1.54	5.15	4.32	5.86	1.89	2.22	1.12	
1200622A	3.40	2.78	2.26	1.41	6.00	5.10	6.97	2.29	2.67	-2.53	10
1200622B	2.91	2.51	2.17	1.58	6.45	4.90	6.80	2.44	2.68	-1.55	10
1200622C	3.81	3.46	2.13	2.61	7.50	8.05	10.78	2.87	3.37	-3.60	10
MEAN	3.38	2.92	2.19	1.87	6.65	6.02	8.18	2.53	2.91	-2.56	
1200619A	3.99	1.46	1.63	1.20	6.05	4.15	6.05	1.62	2.02	-0.23	10
1200619B	2.70	2.10	2.26	1.38	7.50	4.90	7.50	2.28	2.65	0.11	10
1200619C	2.43	3.10	1.54	1.64	4.65	5.55	5.93	1.91	2.25	0.35	10
MEAN	3.04	2.22	1.81	1.41	6.07	4.87	6.50	1.94	2.31	0.07	
2400603A	2.74	1.84	1.97	0.90	6.45	3.00	6.54	1.77	2.17	-0.19	10
2400603B	2.24	1.31	1.79	0.76	5.60	2.60	5.66	1.58	1.95	0.85	10
2400603C	2.79	1.00	1.56	1.22	5.55	4.20	6.46	1.50	1.98	-0.86	10
MEAN	2.59	1.38	1.78	0.96	5.87	3.27	6.22	1.62	2.03	-0.07	
2400601A	1.69	0.94	1.19	0.44	3.25	1.65	3.50	1.08	1.26	-0.27	10
2400601B	2.66	0.80	1.29	0.53	4.15	1.80	4.15	1.17	1.40	0.14	10
2400601C	1.64	1.52	1.26	1.28	3.50	3.80	4.06	1.64	1.79	0.62	10
MEAN	2.00	1.09	1.25	0.75	3.63	2.42	3.91	1.30	1.48	0.16	
2400625A	1.09	1.49	1.31	0.91	4.30	2.65	4.46	1.34	1.60	0.23	10
2400625B	1.32	1.56	1.12	0.93	3.35	2.90	3.63	1.26	1.45	-0.08	10
2400625C	5.14	4.68	1.97	2.20	7.20	6.95	10.01	2.11	2.95	3.15	10
MEAN	2.52	2.58	1.47	1.34	4.95	4.17	6.03	1.57	2.00	1.10	
2400622A	3.55	3.99	2.35	2.35	7.35	7.30	9.58	2.79	3.32	-3.59	10
2400622B	2.84	3.87	2.85	2.26	8.65	7.35	9.15	3.09	3.64	-3.15	10
2400622C	2.94	3.03	2.74	1.23	8.25	4.35	8.30	2.40	3.00	-0.48	10
MEAN	3.11	3.63	2.65	1.94	8.08	6.33	9.01	2.76	3.32	-2.40	
2400619A	2.48	2.28	1.25	1.67	4.05	4.70	4.90	1.82	2.08	-0.59	10
2400619B	3.32	3.03	1.61	1.56	5.75	5.15	6.37	1.83	2.24	0.23	10
2400619C	1.24	4.23	0.75	1.88	2.35	7.55	7.58	1.45	2.03	0.45	10
MEAN	2.35	3.18	1.20	1.71	4.05	5.80	6.28	1.70	2.12	0.03	

TABLE 6.6 (CONT'D)

3600603A(01)	1.83	1.43	1.64	0.71	4.10	2.30	4.29	1.65	1.79	0.04	10
3600603B(01)	3.46	1.41	2.15	0.96	5.90	3.50	6.38	2.01	2.35	-0.94	10
3600603C(01)	3.21	1.73	1.88	1.47	5.85	4.10	6.30	2.10	2.38	-0.36	10
MEAN	2.84	1.53	1.89	1.05	5.28	3.30	5.66	1.92	2.18	-0.42	
3600601A	2.06	3.18	1.37	1.29	3.50	4.55	5.65	1.60	1.89	-0.87	10
3600601B	3.26	3.17	2.20	1.63	8.15	5.75	8.51	2.23	2.74	1.17	10
3600601C	1.98	1.70	1.46	1.45	4.55	4.45	4.69	1.89	2.06	-0.38	10
MEAN	2.43	2.68	1.68	1.46	5.40	4.92	6.28	1.91	2.23	-0.02	
3600625A	2.53	3.69	1.85	1.45	6.15	4.90	6.68	1.88	2.35	0.71	10
3600625B	4.02	3.38	2.06	1.70	6.50	5.75	8.14	2.27	2.67	-0.71	10
3600625C	1.94	2.06	1.53	1.01	4.00	3.25	4.57	1.63	1.84	0.25	10
MEAN	2.83	3.05	1.81	1.38	5.55	4.63	6.46	1.93	2.28	0.09	
3600622A	4.26	3.20	3.40	2.22	9.65	6.35	10.14	3.60	4.06	-4.13	10
3600622B	7.06	5.42	3.40	2.22	10.55	8.00	10.77	3.30	4.06	-2.10	10
3600622C	6.59	3.24	4.04	2.30	14.55	6.95	14.57	3.79	4.65	0.06	10
MEAN	5.97	3.95	3.61	2.25	11.58	7.10	11.83	3.57	4.26	-2.06	
3600603A(05)	2.88	2.20	1.53	1.95	5.05	4.80	6.86	2.21	2.48	-1.75	10
3600603B(05)	2.02	5.90	1.29	3.09	3.95	11.05	11.11	2.72	3.35	0.58	10
3600603C(05)	1.29	4.34	1.39	3.06	4.10	11.00	11.01	2.61	3.36	-0.40	10
MEAN	2.06	4.15	1.41	2.70	4.37	8.95	9.66	2.51	3.06	-0.52	
4800603A	5.63	3.97	2.55	2.12	9.00	7.15	11.49	2.63	3.32	-3.90	10
4800603B	4.73	2.31	2.75	1.31	8.10	3.85	8.10	2.66	3.04	-0.68	10
4800603C	3.20	2.24	2.83	1.46	7.75	4.20	8.54	2.85	3.19	-3.01	10
MEAN	4.52	2.84	2.71	1.63	8.28	5.07	9.38	2.72	3.18	-2.53	
4800601A	1.54	3.36	1.34	2.00	3.55	7.55	7.56	1.94	2.40	-0.85	10
4800601B	2.32	0.93	2.02	0.62	4.55	2.10	4.62	1.91	2.11	0.11	10
4800601C	2.00	3.27	1.40	2.07	4.15	6.55	6.55	2.24	2.50	0.65	10
MEAN	1.96	2.52	1.58	1.56	4.08	5.40	6.24	2.03	2.34	-0.03	
4800625A	7.01	5.71	3.05	3.53	11.05	10.10	13.54	3.85	4.67	5.51	10
4800625B	3.68	7.66	2.03	4.07	6.50	12.00	12.08	3.90	4.54	2.96	10
4800625C	4.17	5.02	2.49	3.15	8.60	8.15	9.31	3.45	4.02	-0.63	10
MEAN	4.96	6.13	2.52	3.58	8.72	10.08	11.64	3.73	4.41	2.61	
4800622A	2.37	7.85	2.68	4.04	6.55	15.92	16.99	3.94	4.85	-6.24	10
4800622B	3.45	3.68	2.51	2.72	7.85	7.42	8.80	3.15	3.70	1.94	10
4800622C	6.11	3.65	3.95	2.07	15.45	6.65	15.59	3.39	4.46	3.50	10
MEAN	3.98	5.06	3.05	2.94	9.95	10.00	13.79	3.49	4.34	-0.27	
4800619A	3.20	5.23	2.25	2.69	6.26	10.10	10.25	3.05	3.51	-2.75	10
4800619B	5.63	3.44	3.36	2.40	9.87	7.75	10.57	3.62	4.13	-4.20	10
4800619C	4.21	3.61	2.56	3.11	7.43	9.80	10.97	3.31	4.03	-6.50	10
MEAN	4.35	4.09	2.72	2.73	7.85	9.22	10.60	3.33	3.89	-4.48	

TABLE 6.6 (CONT'D)

6000603A	3.39	1.39	1.90	0.79	6.30	2.75	6.32	1.70	2.06	0.63	10
6000603B	2.81	2.46	2.05	2.03	6.00	5.65	7.35	2.60	2.89	-0.68	10
6000603C	4.06	2.31	2.92	1.48	8.40	4.65	8.52	2.77	3.27	-1.08	10
MEAN	3.42	2.06	2.29	1.43	6.90	4.35	7.40	2.36	2.74	-0.38	
6000601A	5.63	2.63	2.45	1.56	8.25	5.25	8.94	2.18	2.90	-0.77	10
6000601B	3.97	3.65	2.47	2.02	8.90	7.00	9.56	2.68	3.19	-1.33	10
6000601C	1.41	3.47	1.13	2.15	3.75	7.00	7.02	1.97	2.43	0.09	10
MEAN	3.67	3.25	2.01	1.91	6.97	6.42	8.51	2.27	2.84	-0.67	
6000625A	2.76	2.57	1.36	1.98	4.60	5.60	5.61	2.10	2.40	0.41	10
6000625B	3.26	4.62	1.73	2.93	6.00	7.75	8.27	2.98	3.40	0.70	10
6000625C	2.67	5.53	1.65	3.93	5.85	12.35	13.18	3.53	4.27	-2.49	10
MEAN	2.90	4.24	1.58	2.95	5.48	8.57	9.02	2.87	3.36	-0.46	
6000622A	4.35	6.28	3.98	3.11	10.90	10.95	11.96	4.26	5.05	-3.13	10
6000622B	8.40	5.40	4.77	2.55	14.60	8.50	14.97	4.72	5.41	-1.33	10
6000622C	5.26	5.84	3.74	2.56	11.35	8.50	11.42	3.99	4.53	2.55	10
MEAN	6.01	5.84	4.16	2.74	12.28	9.32	12.78	4.32	5.00	-0.64	
6000619A	1.47	3.31	1.50	1.54	4.65	5.45	5.69	1.81	2.15	0.47	10
6000619B	1.88	2.61	1.54	2.10	4.75	6.60	8.07	2.19	2.60	1.21	10
6000619C	3.23	3.98	1.69	2.62	5.60	8.00	8.49	2.63	3.12	-0.20	10
MEAN	2.19	3.30	1.58	2.09	5.00	6.68	7.42	2.21	2.62	0.49	
7200603A	3.38	2.49	2.06	1.56	5.95	4.25	6.23	2.36	2.58	-0.33	10
7200603B	4.27	2.78	2.56	2.21	8.50	7.20	8.50	2.92	3.38	1.36	10
7200603C	3.84	2.07	2.24	1.32	6.90	3.35	7.23	2.29	2.60	-0.17	10
MEAN	3.83	2.45	2.29	1.70	7.12	4.93	7.32	2.52	2.86	0.29	
7200601A	4.08	1.42	2.11	1.08	6.60	3.55	6.87	2.05	2.37	-0.83	10
7200601B	2.73	2.21	1.81	1.82	5.80	4.75	7.16	2.25	2.57	1.40	10
7200601C	3.07	3.34	2.36	1.76	7.85	5.30	8.86	2.46	2.94	0.65	10
MEAN	3.30	2.32	2.09	1.55	6.75	4.53	7.63	2.25	2.63	0.41	
7200625A	8.56	6.11	3.87	2.88	13.80	9.35	13.80	4.07	4.82	-1.15	10
7200625B	4.76	8.06	2.82	4.05	8.10	12.90	13.54	4.31	4.93	-2.59	10
7200625C	7.45	5.11	3.35	3.49	10.55	9.00	11.22	4.28	4.83	3.00	10
MEAN	6.93	6.43	3.34	3.47	10.82	10.42	12.85	4.22	4.86	-0.24	
7200622A	7.92	6.21	4.52	3.76	13.50	12.95	14.83	4.93	5.88	-6.58	10
7200622B	4.01	7.59	2.86	4.95	9.00	14.00	15.70	4.76	5.72	-9.00	10
7200622C	10.38	3.26	4.76	3.83	15.50	11.75	15.50	5.20	6.11	-3.81	10
MEAN	7.44	5.69	4.05	4.18	12.67	12.90	15.34	4.96	5.90	-6.46	
7200619A	4.20	3.11	2.67	2.28	8.00	6.20	8.17	3.20	3.51	0.03	10
7200619B	7.33	7.49	3.06	3.72	10.30	14.60	14.85	3.70	4.82	1.82	10
7200619C	5.25	4.99	2.99	3.16	10.35	9.40	13.98	3.43	4.35	4.85	10
MEAN	5.60	5.20	2.91	3.05	9.55	10.07	12.33	3.45	4.23	2.23	
8400603A	3.21	2.28	2.24	1.48	5.80	5.00	5.80	2.40	2.69	0.52	10

TABLE 6.6 (CONT'D)

8400603B	3.47	2.46	2.03	1.65	6.45	5.85	7.96	2.11	2.61	1.05	10
8400603C	3.30	2.55	2.59	1.33	7.30	4.15	7.57	2.54	2.91	0.94	10
MEAN	3.33	2.43	2.28	1.49	6.52	5.00	7.11	2.35	2.74	0.83	
8400601A	3.19	2.63	2.23	1.44	6.60	4.35	6.85	2.31	2.66	1.41	10
8400601B	2.74	3.75	1.99	2.06	5.80	6.60	6.69	2.49	2.86	0.42	10
8400601C	3.94	2.91	2.65	1.55	7.60	5.65	9.23	2.44	3.07	-3.23	10
MEAN	3.29	3.10	2.29	1.68	6.67	5.53	7.59	2.41	2.86	-0.47	
8400625A	4.59	6.50	2.99	3.62	9.05	11.05	11.93	3.94	4.69	-2.74	10
8400625B	6.77	9.25	2.80	4.23	10.65	16.25	17.17	3.68	5.07	6.26	10
8400625C	6.34	6.38	3.39	3.28	11.15	11.85	13.11	3.88	4.72	-2.99	10
MEAN	5.90	7.38	3.06	3.71	10.28	13.05	14.07	3.84	4.83	0.18	
8400622A	9.71	4.85	4.60	3.99	15.60	12.75	15.73	5.06	6.09	-5.43	10
8400622B	2.74	12.88	2.83	6.49	9.95	21.35	21.69	5.48	7.08	-9.91	10
8400622C	3.72	5.80	2.51	3.82	8.65	12.45	12.85	3.80	4.57	-2.41	10
MEAN	5.39	7.84	3.31	4.77	11.40	15.52	16.76	4.78	5.91	-5.92	
8400619A	4.05	4.80	2.79	2.47	8.65	8.00	8.97	3.29	3.73	1.58	10
8400619B	4.84	5.63	2.49	3.54	7.60	11.00	11.10	3.83	4.33	0.53	10
8400619C	2.51	6.87	1.66	3.68	4.45	11.10	11.14	3.32	4.04	-0.54	10
MEAN	3.80	5.77	2.31	3.23	6.90	10.03	10.40	3.48	4.03	0.52	
9600603A	4.68	1.35	2.87	0.92	10.70	2.55	10.70	2.31	3.01	0.29	10
9600603B	4.63	3.39	2.50	1.73	8.70	5.70	8.94	2.50	3.04	0.78	10
9600603C	3.36	2.26	1.67	0.94	6.25	3.15	7.00	1.40	1.92	1.18	10
MEAN	4.23	2.33	2.35	1.20	8.55	3.80	8.88	2.07	2.66	0.75	
9600601A	2.49	1.75	1.89	1.37	6.50	3.55	6.52	2.03	2.34	1.34	10
9600601B	3.51	2.19	2.95	1.58	7.65	5.60	8.54	2.96	3.34	2.16	10
9600601C	3.49	1.29	2.72	1.06	7.20	3.40	7.23	2.68	2.92	0.51	10
MEAN	3.16	1.74	2.52	1.34	7.12	4.18	7.43	2.56	2.87	1.34	
9600625A	4.28	3.69	2.19	2.42	8.20	6.75	8.20	2.88	3.27	0.15	10
9600625B	6.23	3.86	3.03	3.05	9.95	8.20	10.34	3.85	4.30	-0.82	10
9600625C	2.33	6.67	1.98	3.64	6.05	11.65	11.85	3.55	4.14	-0.22	10
MEAN	4.28	4.74	2.40	3.04	8.07	8.87	10.13	3.43	3.90	-0.30	
9600622A	2.59	2.47	1.71	1.37	4.60	4.60	6.00	1.93	2.19	-0.69	10
9600622B	3.06	3.31	2.28	2.09	5.85	6.80	7.32	2.78	3.09	0.47	10
9600622C	4.16	5.33	3.35	3.63	10.25	10.25	13.33	4.17	4.94	-8.30	10
MEAN	3.27	3.71	2.45	2.36	6.90	7.22	8.88	2.96	3.41	-2.84	
9600619A	4.28	5.84	1.89	3.09	6.25	10.20	10.63	2.87	3.62	2.19	10
9600619B	4.08	4.27	1.81	2.66	6.95	9.30	9.39	2.54	3.22	0.22	10
9600619C	2.87	6.57	1.52	2.82	5.10	11.10	11.21	2.31	3.21	1.42	10
MEAN	3.74	5.56	1.74	2.86	6.10	10.20	10.41	2.57	3.35	1.28	

TABLE 6.7. DISPRSION DATA FOR ENDURANCE TEST, MEASURED IN CENTIMETERS

TGT NO.	HCI	VCI	HSD	VSD	EHS	EVS	ES	MR	RSD	COV	NO.RDS.
1200603A	8.56	4.94	5.46	2.77	16.76	8.76	17.97	5.15	6.12	-5.78	10
1200603B	8.36	4.53	5.40	3.03	15.62	8.00	16.23	5.42	6.19	3.77	10
1200603C	4.60	2.73	3.58	2.01	8.89	5.59	9.72	3.66	4.11	1.30	10
MEAN	7.17	4.07	4.81	2.60	13.76	7.45	14.64	4.74	5.47	-0.23	
1200601A	5.14	4.67	6.28	3.99	21.08	13.08	21.30	5.89	7.44	-3.84	10
1200601B	5.11	3.95	3.27	2.27	11.18	7.37	12.22	3.25	3.98	-5.11	10
1200601C	6.48	5.16	5.01	3.78	15.49	11.81	16.70	5.39	6.28	0.92	10
MEAN	5.58	4.59	4.85	3.35	15.92	10.75	16.74	4.84	5.90	-2.67	
1200625A	6.02	2.04	4.27	2.17	14.35	6.60	14.53	3.99	4.79	1.73	10
1200625B	4.61	5.93	2.77	2.81	9.14	8.89	11.58	3.28	3.95	1.93	10
1200625C	8.45	11.13	4.66	6.76	15.75	17.40	18.57	7.13	8.21	18.11	10
MEAN	6.36	6.37	3.90	3.91	13.08	10.96	14.90	4.80	5.65	7.26	
1200622A	8.65	7.06	5.75	3.59	15.24	12.95	17.70	5.82	6.78	-16.35	10
1200622B	7.39	6.39	5.51	4.01	16.38	12.45	17.27	6.18	6.81	-10.02	10
1200622C	9.69	8.79	5.41	6.63	19.05	20.45	27.39	7.28	8.56	-23.22	10
MEAN	8.58	7.41	5.55	4.74	16.89	15.28	20.79	6.43	7.38	-16.53	
1200619A	10.15	3.72	4.13	3.06	15.37	10.54	15.38	4.11	5.14	-1.51	10
1200619B	6.86	5.35	5.75	3.51	19.05	12.45	19.05	5.80	6.74	0.68	10
1200619C	6.18	7.87	3.91	4.17	11.81	14.10	15.07	4.86	5.71	2.24	10
MEAN	7.73	5.65	4.59	3.58	15.41	12.36	16.50	4.93	5.86	0.47	
2400603A	6.97	4.67	5.01	2.29	16.38	7.62	16.62	4.51	5.51	-1.23	10
2400603B	5.69	3.33	4.55	1.93	14.22	6.60	14.37	4.01	4.95	5.45	10
2400603C	7.10	2.54	3.97	3.09	14.10	10.67	16.40	3.80	5.03	-5.52	10
MEAN	6.59	3.51	4.51	2.44	14.90	8.30	15.80	4.11	5.16	-0.43	
2400601A	4.31	2.40	3.01	1.12	8.26	4.19	8.89	2.75	3.21	-1.74	10
2400601B	6.77	2.03	3.28	1.34	10.54	4.57	10.55	2.98	3.55	0.92	10
2400601C	4.18	3.86	3.20	3.24	8.89	9.65	10.32	4.17	4.55	3.99	10
MEAN	5.08	2.76	3.16	1.90	9.23	6.14	9.92	3.30	3.77	1.05	
2400625A	2.78	3.80	3.34	2.30	10.92	6.73	11.34	3.40	4.05	1.50	10
2400625B	3.35	3.96	2.83	2.37	8.51	7.37	9.22	3.21	3.69	-0.53	10
2400625C	13.06	11.89	5.00	5.58	18.29	17.65	25.42	5.36	7.49	20.33	10
MEAN	6.40	6.55	3.72	3.41	12.57	10.58	15.33	3.99	5.08	7.10	
2400622A	9.02	10.13	5.96	5.96	18.67	18.54	24.33	7.08	8.43	-23.13	10
2400622B	7.23	9.84	7.24	5.73	21.97	18.67	23.23	7.85	9.24	-20.31	10
2400622C	7.48	7.71	6.96	3.11	20.95	11.05	21.08	6.09	7.62	-3.08	10
MEAN	7.91	9.23	6.72	4.94	20.53	16.09	22.88	7.01	8.43	-15.51	
2400619A	6.31	5.80	3.17	4.24	10.29	11.94	12.45	4.62	5.29	-3.81	10
2400619B	8.45	7.71	4.09	3.97	14.61	13.08	16.18	4.64	5.70	1.51	10
2400619C	3.15	10.74	1.90	4.79	5.97	19.18	19.25	3.69	5.15	2.90	10
MEAN	5.97	8.09	3.05	4.33	10.29	14.73	15.96	4.32	5.38	0.20	

TABLE 6.7 (CONT'D)

3600603A(01)	4.65	3.64	4.18	1.81	10.41	5.84	10.89	4.18	4.55	0.25	10
3600603B(01)	8.80	3.59	5.46	2.44	14.99	8.89	16.21	5.10	5.97	-6.06	10
3600603C(01)	8.17	4.39	4.77	3.73	14.86	10.41	15.99	5.34	6.06	-2.34	10
MEAN	7.21	3.88	4.80	2.66	13.42	8.38	14.36	4.87	5.53	-2.72	
3600601A	5.23	8.08	3.49	3.29	8.89	11.56	14.35	4.05	4.80	-5.61	10
3600601B	8.28	8.05	5.59	4.13	20.70	14.61	21.62	5.67	6.95	7.57	10
3600601C	5.04	4.32	3.71	3.68	11.56	11.30	11.92	4.80	5.22	-2.43	10
MEAN	6.18	6.82	4.26	3.70	13.72	12.49	15.96	4.84	5.66	-0.16	
3600625A	6.43	9.37	4.70	3.67	15.62	12.45	16.97	4.77	5.96	4.60	10
3600625B	10.21	8.60	5.23	4.32	16.51	14.61	20.68	5.77	6.79	-4.56	10
3600625C	4.93	5.24	3.90	2.56	10.16	8.26	11.61	4.14	4.66	1.63	10
MEAN	7.19	7.74	4.61	3.52	14.10	11.77	16.42	4.90	5.80	0.56	
3600622A	10.83	8.13	8.63	5.64	24.51	16.13	25.74	9.15	10.31	-26.63	10
3600622B	17.95	13.77	8.63	5.63	26.80	20.32	27.35	8.38	10.31	-13.58	10
3600622C	16.75	8.23	10.27	5.84	36.96	17.65	37.02	9.64	11.81	0.36	10
MEAN	15.18	10.04	9.18	5.70	29.42	18.03	30.04	9.06	10.81	-13.28	
3600603A(05)	7.32	5.60	3.90	4.94	12.83	12.19	17.42	5.60	6.29	-11.27	10
3600603B(05)	5.13	15.00	3.29	7.84	10.03	28.07	28.23	6.92	8.51	3.74	10
3600603C(05)	3.28	11.04	3.53	7.78	10.41	27.94	27.97	6.64	8.54	-2.61	10
MEAN	5.24	10.55	3.57	6.86	11.09	22.73	24.54	6.39	7.78	-3.38	
4800603A	14.31	10.10	6.48	5.38	22.86	18.16	29.20	6.69	8.42	-25.15	10
4800603B	12.03	5.88	6.98	3.32	20.57	9.78	20.57	6.77	7.73	-4.36	10
4800603C	8.14	5.70	7.19	3.71	19.68	10.67	21.70	7.24	8.09	-19.39	10
MEAN	11.49	7.23	6.89	4.14	21.04	12.87	23.82	6.90	8.08	-16.30	
4800601A	3.92	8.55	3.40	5.07	9.02	19.18	19.20	4.93	6.11	-5.49	10
4800601B	5.91	2.36	5.12	1.56	11.56	5.33	11.73	4.85	5.35	0.69	10
4800601C	5.08	8.31	3.56	5.26	10.54	16.64	16.64	5.68	6.35	4.18	10
MEAN	4.97	6.41	4.02	3.97	10.37	13.72	15.86	5.15	5.94	-0.21	
4800625A	17.81	14.50	7.76	8.97	28.07	25.65	34.40	9.78	11.86	35.53	10
4800625B	9.36	19.46	5.16	10.33	16.51	30.48	30.68	9.90	11.54	19.07	10
4800625C	10.60	12.74	6.32	8.01	21.84	20.70	23.65	8.76	10.20	-4.06	10
MEAN	12.59	15.57	6.41	9.10	22.14	25.61	29.57	9.48	11.20	16.85	
4800622A	6.03	19.93	6.81	10.25	16.64	40.44	43.15	10.00	12.31	-40.28	10
4800622B	8.78	9.35	6.37	6.92	19.94	18.85	22.36	8.01	9.41	12.49	10
4800622C	15.51	9.26	10.04	5.26	39.24	16.89	39.60	8.61	11.34	22.57	10
MEAN	10.11	12.85	7.74	7.48	25.27	25.39	35.04	8.87	11.02	-1.74	
4800619A	8.13	13.28	5.72	6.84	15.90	25.65	26.04	7.75	8.91	-17.74	10
4800619B	14.31	8.74	8.54	6.09	25.07	19.68	26.84	9.19	10.49	-27.13	10
4800619C	10.70	9.16	6.50	7.90	18.87	24.89	27.86	8.41	10.23	-41.92	10
MEAN	11.05	10.40	6.92	6.94	19.95	23.41	26.91	8.45	9.88	-28.93	

TABLE 6.7 (CONT'D)

6000603A	8.61	3.54	4.82	2.02	16.00	6.99	16.04	4.32	5.22	4.05	10
6000603B	7.15	6.26	5.22	5.15	15.24	14.35	18.68	6.61	7.33	-4.38	10
6000603C	10.31	5.87	7.41	3.76	21.34	11.81	21.65	7.04	8.31	-6.96	10
MEAN	8.69	5.22	5.81	3.64	17.53	11.05	18.79	5.99	6.95	-2.43	
6000601A	14.31	6.68	6.21	3.97	20.95	13.34	22.70	5.53	7.37	-4.94	10
6000601B	10.08	9.27	6.26	5.13	22.61	17.78	24.29	6.80	8.10	-8.61	10
6000601C	3.58	8.81	2.88	5.46	9.53	17.78	17.83	5.00	6.17	0.60	10
MEAN	9.33	8.25	5.12	4.85	17.70	16.30	21.60	5.78	7.21	-4.31	
6000625A	7.02	6.53	3.45	5.03	11.68	14.22	14.26	5.35	6.10	2.64	10
6000625B	8.28	11.73	4.39	7.43	15.24	19.68	21.02	7.57	8.63	4.54	10
6000625C	6.79	14.06	4.20	9.99	14.86	31.37	33.47	8.98	10.84	-16.08	10
MEAN	7.37	10.77	4.01	7.49	13.93	21.76	22.92	7.30	8.52	-2.97	
6000622A	11.06	15.95	10.10	7.91	27.69	27.81	30.37	10.82	12.83	-20.18	10
6000622B	21.35	13.73	12.12	6.47	37.08	21.59	38.02	11.98	13.74	-8.61	10
6000622C	13.37	14.83	9.49	6.49	28.83	21.59	29.00	10.13	11.50	16.45	10
MEAN	15.26	14.84	10.57	6.96	31.20	23.66	32.46	10.98	12.69	-4.12	
6000619A	3.73	8.42	3.82	3.92	11.81	13.84	14.44	4.61	5.47	3.05	10
6000619B	4.76	6.63	3.90	5.34	12.07	16.76	20.51	5.55	6.61	7.79	10
6000619C	8.20	10.11	4.30	6.65	14.22	20.32	21.57	6.67	7.91	-1.30	10
MEAN	5.57	8.39	4.01	5.30	12.70	16.98	18.84	5.61	6.67	3.18	
7200603A	8.59	6.34	5.24	3.95	15.11	10.80	15.82	5.99	6.56	-2.13	10
7200603B	10.85	7.07	6.50	5.62	21.59	18.29	21.60	7.42	8.60	8.80	10
7200603C	9.75	5.27	5.69	3.36	17.53	8.51	18.36	5.81	6.61	-1.08	10
MEAN	9.73	6.23	5.81	4.31	18.08	12.53	18.59	6.41	7.26	1.86	
7200601A	10.38	3.61	5.36	2.75	16.76	9.02	17.44	5.21	6.02	-5.36	10
7200601B	6.95	5.63	4.61	4.63	14.73	12.07	18.19	5.71	6.53	9.00	10
7200601C	7.81	8.48	5.99	4.46	19.94	13.46	22.49	6.25	7.47	4.22	10
MEAN	8.38	5.91	5.32	3.95	17.14	11.51	19.38	5.72	6.68	2.62	
7200625A	21.76	15.53	9.82	7.32	35.05	23.75	35.05	10.34	12.25	-7.41	10
7200625B	12.09	20.47	7.16	10.28	20.57	32.77	34.40	10.95	12.52	-16.68	10
7200625C	18.94	12.99	8.50	8.86	26.80	22.86	28.50	10.87	12.28	19.36	10
MEAN	17.59	16.33	8.49	8.82	27.47	26.46	32.65	10.72	12.35	-1.58	
7200622A	20.13	15.77	11.49	9.56	34.29	32.89	37.66	12.53	14.94	-42.42	10
7200622B	10.20	19.29	7.27	12.57	22.86	35.56	39.87	12.08	14.52	-58.08	10
7200622C	26.38	8.28	12.08	9.74	39.37	29.84	39.37	13.21	15.52	-24.60	10
MEAN	18.90	14.45	10.28	10.62	32.17	32.77	38.97	12.61	14.99	-41.70	
7200619A	10.68	7.90	6.79	5.78	20.32	15.75	20.75	8.13	8.92	0.20	10
7200619B	18.62	19.02	7.78	9.45	26.16	37.08	37.71	9.41	12.24	11.77	10
7200619C	13.35	12.69	7.59	8.02	26.29	23.88	35.51	8.71	11.04	31.27	10
MEAN	14.22	13.20	7.39	7.75	24.26	25.57	31.32	8.75	10.73	14.41	
8400603A	8.17	5.80	5.69	3.77	14.73	12.70	14.73	6.10	6.82	3.33	10

TABLE 6.7 (CONT'D)

8400603B	8.81	6.25	5.14	4.19	16.38	14.86	20.23	5.36	6.63	6.75	10
8400603C	8.38	6.49	6.57	3.39	18.54	10.54	19.23	6.45	7.40	6.03	10
MEAN	8.45	6.18	5.80	3.78	16.55	12.70	18.06	5.97	6.95	5.37	
8400601A	8.12	6.68	5.67	3.67	16.76	11.05	17.41	5.87	6.75	9.10	10
8400601B	6.97	9.54	5.06	5.22	14.73	16.76	17.00	6.33	7.27	2.68	10
8400601C	10.01	7.39	6.74	3.93	19.30	14.35	23.45	6.19	7.80	-20.81	10
MEAN	8.37	7.87	5.82	4.27	16.93	14.05	19.28	6.13	7.27	-3.01	
8400625A	11.66	16.51	7.60	9.18	22.99	28.07	30.31	10.02	11.92	-17.66	10
8400625B	17.21	23.49	7.11	10.74	27.05	41.27	43.62	9.35	12.88	40.37	10
8400625C	16.10	16.21	8.62	8.33	28.32	30.10	33.29	9.86	11.99	-19.27	10
MEAN	14.99	18.74	7.78	9.42	26.12	33.15	35.74	9.74	12.26	1.15	
8400622A	24.68	12.32	11.68	10.14	39.62	32.38	39.95	12.86	15.46	-35.06	10
8400622B	6.97	32.72	7.20	16.49	25.27	54.23	55.08	13.91	17.99	-63.92	10
8400622C	9.46	14.73	6.38	9.70	21.97	31.62	32.65	9.66	11.61	-15.55	10
MEAN	13.70	19.92	8.42	12.11	28.96	39.41	42.56	12.14	15.02	-38.17	
8400619A	10.29	12.19	7.09	6.28	21.97	20.32	22.78	8.35	9.47	10.17	10
8400619B	12.29	14.31	6.32	9.00	19.30	27.94	28.18	9.72	11.00	3.44	10
8400619C	6.38	17.45	4.20	9.35	11.30	28.19	28.31	8.43	10.25	-3.52	10
MEAN	9.65	14.65	5.87	8.21	17.53	25.48	26.42	8.83	10.24	3.37	
9600603A	11.90	3.43	7.29	2.34	27.18	6.48	27.19	5.86	7.65	1.88	10
9600603B	11.77	8.61	6.34	4.39	22.10	14.48	22.70	6.35	7.71	5.01	10
9600603C	8.53	5.75	4.24	2.39	15.88	8.00	17.78	3.57	4.87	7.62	10
MEAN	10.74	5.93	5.96	3.04	21.72	9.65	22.56	5.26	6.75	4.84	
9600601A	6.32	4.44	4.80	3.49	16.51	9.02	16.57	5.16	5.93	8.63	10
9600601B	8.92	5.58	7.48	4.00	19.43	14.22	21.70	7.51	8.49	13.94	10
9600601C	8.88	3.28	6.92	2.70	18.29	8.64	18.37	6.81	7.43	3.32	10
MEAN	8.04	4.43	6.40	3.40	18.08	10.63	18.88	6.49	7.28	8.63	
9600625A	10.88	9.37	5.56	6.16	20.83	17.14	20.83	7.32	8.30	0.94	10
9600625B	15.84	9.80	7.69	7.75	25.27	20.83	26.25	9.77	10.92	-5.30	10
9600625C	5.92	16.95	5.03	9.24	15.37	29.59	30.09	9.02	10.52	-1.40	10
MEAN	10.88	12.04	6.09	7.71	20.49	22.52	25.73	8.70	9.91	-1.92	
9600622A	6.58	6.29	4.34	3.47	11.68	11.68	15.24	4.91	5.56	-4.46	10
9600622B	7.79	8.42	5.79	5.32	14.86	17.27	18.60	7.07	7.86	3.06	10
9600622C	10.57	13.55	8.52	9.22	26.04	26.04	33.86	10.59	12.55	-53.52	10
MEAN	8.31	9.42	6.22	6.00	17.53	18.33	22.57	7.52	8.66	-18.31	
9600619A	10.87	14.85	4.81	7.85	15.88	25.91	27.01	7.30	9.21	14.16	10
9600619B	10.36	10.85	4.60	6.75	17.65	23.62	23.85	6.46	8.17	1.45	10
9600619C	7.30	16.70	3.86	7.17	12.95	28.19	28.49	5.86	8.15	9.16	10
MEAN	9.51	14.13	4.42	7.26	15.49	25.91	26.45	6.54	8.51	8.26	

TABLE 6.8. DISPERSION DATA FOR ENDURANCE TEST, MEASURED IN MILS

TGT NO.	HCI	VCI	HSD	VSD	EHS	EVS	ES	MR	RSD	COV	NO.RDS.
1200603A	0.94	0.54	0.60	0.30	1.83	0.96	1.96	0.56	0.67	-0.07	10
1200603B	0.91	0.50	0.59	0.33	1.71	0.87	1.77	0.59	0.68	0.05	10
1200603C	0.50	0.30	0.39	0.22	0.97	0.61	1.06	0.40	0.45	0.02	10
MEAN	0.78	0.44	0.53	0.28	1.50	0.81	1.60	0.52	0.60	-0.00	
1200601A	0.56	0.51	0.69	0.44	2.30	1.43	2.33	0.64	0.81	-0.05	10
1200601B	0.56	0.43	0.36	0.25	1.22	0.81	1.34	0.36	0.44	-0.06	10
1200601C	0.71	0.56	0.55	0.41	1.69	1.29	1.83	0.59	0.69	0.01	10
MEAN	0.61	0.50	0.53	0.37	1.74	1.18	1.83	0.53	0.65	-0.03	
1200625A	0.66	0.22	0.47	0.24	1.57	0.72	1.59	0.44	0.52	0.02	10
1200625B	0.50	0.65	0.30	0.31	1.00	0.97	1.27	0.36	0.43	0.02	10
1200625C	0.92	1.22	0.51	0.74	1.72	1.90	2.03	0.78	0.90	0.22	10
MEAN	0.70	0.70	0.43	0.43	1.43	1.20	1.63	0.52	0.62	0.09	
1200622A	0.95	0.77	0.63	0.39	1.67	1.42	1.94	0.64	0.74	-0.20	10
1200622B	0.81	0.70	0.60	0.44	1.79	1.36	1.89	0.68	0.74	-0.12	10
1200622C	1.06	0.96	0.59	0.73	2.08	2.24	2.99	0.80	0.94	-0.28	10
MEAN	0.94	0.81	0.61	0.52	1.85	1.67	2.27	0.70	0.81	-0.20	
1200619A	1.11	0.41	0.45	0.33	1.68	1.15	1.68	0.45	0.56	-0.02	10
1200619B	0.75	0.58	0.63	0.38	2.08	1.36	2.08	0.63	0.74	0.01	10
1200619C	0.68	0.86	0.43	0.46	1.29	1.54	1.65	0.53	0.62	0.03	10
MEAN	0.85	0.62	0.50	0.39	1.68	1.35	1.80	0.54	0.64	0.01	
2400603A	0.76	0.51	0.55	0.25	1.79	0.83	1.82	0.49	0.60	-0.01	10
2400603B	0.62	0.36	0.50	0.21	1.56	0.72	1.57	0.44	0.54	0.07	10
2400603C	0.78	0.28	0.43	0.34	1.54	1.17	1.79	0.42	0.55	-0.07	10
MEAN	0.72	0.38	0.49	0.27	1.63	0.91	1.73	0.45	0.56	-0.01	
2400601A	0.47	0.26	0.33	0.12	0.90	0.46	0.97	0.30	0.35	-0.02	10
2400601B	0.74	0.22	0.36	0.15	1.15	0.50	1.15	0.33	0.39	0.01	10
2400601C	0.46	0.42	0.35	0.35	0.97	1.06	1.13	0.46	0.50	0.05	10
MEAN	0.56	0.30	0.35	0.21	1.01	0.67	1.08	0.36	0.41	0.01	
2400625A	0.30	0.42	0.36	0.25	1.19	0.74	1.24	0.37	0.44	0.02	10
2400625B	0.37	0.43	0.31	0.26	0.93	0.81	1.01	0.35	0.40	-0.01	10
2400625C	1.43	1.30	0.55	0.61	2.00	1.93	2.78	0.59	0.82	0.24	10
MEAN	0.70	0.72	0.41	0.37	1.37	1.16	1.68	0.44	0.56	0.08	
2400622A	0.99	1.11	0.65	0.65	2.04	2.03	2.66	0.77	0.92	-0.28	10
2400622B	0.79	1.08	0.79	0.63	2.40	2.04	2.54	0.86	1.01	-0.24	10
2400622C	0.82	0.84	0.76	0.34	2.29	1.21	2.30	0.67	0.83	-0.04	10
MEAN	0.86	1.01	0.73	0.54	2.24	1.76	2.50	0.77	0.92	-0.19	
2400619A	0.69	0.63	0.35	0.46	1.12	1.31	1.36	0.50	0.58	-0.05	10
2400619B	0.92	0.84	0.45	0.43	1.60	1.43	1.77	0.51	0.62	0.02	10
2400619C	0.34	1.17	0.21	0.52	0.65	2.10	2.10	0.40	0.56	0.03	10
MEAN	0.65	0.88	0.33	0.47	1.12	1.61	1.74	0.47	0.59	0.00	

TABLE 6.8 (CONT'D)

3600603A(01)	0.51	0.40	0.46	0.20	1.14	0.64	1.19	0.46	0.50	0.00	10
3600603B(01)	0.96	0.39	0.60	0.27	1.64	0.97	1.77	0.56	0.65	-0.07	10
3600603C(01)	0.89	0.48	0.52	0.41	1.62	1.14	1.75	0.58	0.66	-0.03	10
MEAN	0.79	0.42	0.52	0.29	1.47	0.92	1.57	0.53	0.60	-0.03	
3600601A	0.57	0.88	0.38	0.36	0.97	1.26	1.57	0.44	0.52	-0.07	10
3600601B	0.91	0.88	0.61	0.45	2.26	1.60	2.36	0.62	0.76	0.09	10
3600601C	0.55	0.47	0.41	0.40	1.26	1.24	1.30	0.52	0.57	-0.03	10
MEAN	0.68	0.75	0.47	0.40	1.50	1.37	1.75	0.53	0.62	-0.00	
3600625A	0.70	1.02	0.51	0.40	1.71	1.36	1.86	0.52	0.65	0.05	10
3600625B	1.12	0.94	0.57	0.47	1.81	1.60	2.26	0.63	0.74	-0.05	10
3600625C	0.54	0.57	0.43	0.28	1.11	0.90	1.27	0.45	0.51	0.02	10
MEAN	0.79	0.85	0.50	0.38	1.54	1.29	1.79	0.54	0.63	0.01	
3600622A	1.18	0.89	0.94	0.62	2.68	1.76	2.81	1.00	1.13	-0.32	10
3600622B	1.96	1.51	0.94	0.62	2.93	2.22	2.99	0.92	1.13	-0.16	10
3600622C	1.83	0.90	1.12	0.64	4.04	1.93	4.05	1.05	1.29	0.00	10
MEAN	1.66	1.10	1.00	0.62	3.22	1.97	3.28	0.99	1.18	-0.16	
3600603A(05)	0.80	0.61	0.43	0.54	1.40	1.33	1.90	0.61	0.69	-0.13	10
3600603B(05)	0.56	1.64	0.36	0.86	1.10	3.07	3.09	0.76	0.93	0.04	10
3600603C(05)	0.36	1.21	0.39	0.85	1.14	3.05	3.06	0.73	0.93	-0.03	10
MEAN	0.57	1.15	0.39	0.75	1.21	2.49	2.68	0.70	0.85	-0.04	
4800603A	1.56	1.10	0.71	0.59	2.50	1.99	3.19	0.73	0.92	-0.30	10
4800603B	1.31	0.64	0.76	0.36	2.25	1.07	2.25	0.74	0.85	-0.05	10
4800603C	0.89	0.62	0.79	0.41	2.15	1.17	2.37	0.79	0.88	-0.23	10
MEAN	1.26	0.79	0.75	0.45	2.30	1.41	2.60	0.75	0.88	-0.19	
4800601A	0.43	0.93	0.37	0.55	0.99	2.10	2.10	0.54	0.67	-0.07	10
4800601B	0.65	0.26	0.56	0.17	1.26	0.58	1.28	0.53	0.59	0.01	10
4800601C	0.56	0.91	0.39	0.58	1.15	1.82	1.82	0.62	0.69	0.05	10
MEAN	0.54	0.70	0.44	0.43	1.13	1.50	1.73	0.56	0.65	-0.00	
4800625A	1.95	1.58	0.85	0.98	3.07	2.80	3.76	1.07	1.30	0.42	10
4800625B	1.02	2.13	0.56	1.13	1.81	3.33	3.35	1.08	1.26	0.23	10
4800625C	1.16	1.39	0.69	0.88	2.39	2.26	2.59	0.96	1.12	-0.05	10
MEAN	1.38	1.70	0.70	1.00	2.42	2.80	3.23	1.04	1.22	0.20	
4800622A	0.66	2.18	0.74	1.12	1.82	4.42	4.72	1.09	1.35	-0.48	10
4800622B	0.96	1.02	0.70	0.76	2.18	2.06	2.44	0.88	1.03	0.15	10
4800622C	1.70	1.01	1.10	0.57	4.29	1.85	4.33	0.94	1.24	0.27	10
MEAN	1.10	1.40	0.85	0.82	2.76	2.78	3.83	0.97	1.20	-0.02	
4800619A	0.89	1.45	0.63	0.75	1.74	2.80	2.85	0.85	0.97	-0.21	10
4800619B	1.56	0.96	0.93	0.67	2.74	2.15	2.93	1.01	1.15	-0.32	10
4800619C	1.17	1.00	0.71	0.86	2.06	2.72	3.05	0.92	1.12	-0.50	10
MEAN	1.21	1.14	0.76	0.76	2.18	2.56	2.94	0.92	1.08	-0.35	

TABLE 6.8 (CONT'D)

6000603A	0.94	0.39	0.53	0.22	1.75	0.76	1.75	0.47	0.57	0.05	10
6000603B	0.78	0.68	0.57	0.56	1.67	1.57	2.04	0.72	0.80	-0.05	10
6000603C	1.13	0.64	0.81	0.41	2.33	1.29	2.37	0.77	0.91	-0.08	10
MEAN	0.95	0.57	0.64	0.40	1.92	1.21	2.05	0.66	0.76	-0.03	
6000601A	1.56	0.73	0.68	0.43	2.29	1.46	2.48	0.60	0.81	-0.06	10
6000601B	1.10	1.01	0.68	0.56	2.47	1.94	2.66	0.74	0.89	-0.10	10
6000601C	0.39	0.96	0.31	0.60	1.04	1.94	1.95	0.55	0.67	0.01	10
MEAN	1.02	0.90	0.56	0.53	1.93	1.78	2.36	0.63	0.79	-0.05	
6000625A	0.77	0.71	0.38	0.55	1.28	1.56	1.56	0.58	0.67	0.03	10
6000625B	0.91	1.28	0.48	0.81	1.67	2.15	2.30	0.83	0.94	0.05	10
6000625C	0.74	1.54	0.46	1.09	1.62	3.43	3.66	0.98	1.18	-0.19	10
MEAN	0.81	1.18	0.44	0.82	1.52	2.38	2.51	0.80	0.93	-0.04	
6000622A	1.21	1.74	1.10	0.86	3.03	3.04	3.32	1.18	1.40	-0.24	10
6000622B	2.33	1.50	1.32	0.71	4.05	2.36	4.16	1.31	1.50	-0.10	10
6000622C	1.46	1.62	1.04	0.71	3.15	2.36	3.17	1.11	1.26	0.20	10
MEAN	1.67	1.62	1.16	0.76	3.41	2.59	3.55	1.20	1.39	-0.05	
6000619A	0.41	0.92	0.42	0.43	1.29	1.51	1.58	0.50	0.60	0.04	10
6000619B	0.52	0.72	0.43	0.58	1.32	1.83	2.24	0.61	0.72	0.09	10
6000619C	0.90	1.11	0.47	0.73	1.56	2.22	2.36	0.73	0.87	-0.02	10
MEAN	0.61	0.92	0.44	0.58	1.39	1.86	2.06	0.61	0.73	0.04	
7200603A	0.94	0.69	0.57	0.43	1.65	1.18	1.73	0.65	0.72	-0.03	10
7200603B	1.19	0.77	0.71	0.61	2.36	2.00	2.36	0.81	0.94	0.11	10
7200603C	1.07	0.58	0.62	0.37	1.92	0.93	2.01	0.64	0.72	-0.01	10
MEAN	1.06	0.68	0.64	0.47	1.98	1.37	2.03	0.70	0.79	0.02	
7200601A	1.13	0.39	0.59	0.30	1.83	0.99	1.91	0.57	0.66	-0.06	10
7200601B	0.76	0.62	0.50	0.51	1.61	1.32	1.99	0.62	0.71	0.11	10
7200601C	0.85	0.93	0.66	0.49	2.18	1.47	2.46	0.68	0.82	0.05	10
MEAN	0.92	0.65	0.58	0.43	1.87	1.26	2.12	0.63	0.73	0.03	
7200625A	2.38	1.70	1.07	0.80	3.83	2.60	3.83	1.13	1.34	-0.09	10
7200625B	1.32	2.24	0.78	1.12	2.25	3.58	3.76	1.20	1.37	-0.20	10
7200625C	2.07	1.42	0.93	0.97	2.93	2.50	3.12	1.19	1.34	0.23	10
MEAN	1.92	1.79	0.93	0.96	3.00	2.89	3.57	1.17	1.35	-0.02	
7200622A	2.20	1.72	1.26	1.05	3.75	3.60	4.12	1.37	1.63	-0.51	10
7200622B	1.11	2.11	0.79	1.37	2.50	3.89	4.36	1.32	1.59	-0.69	10
7200622C	2.88	0.91	1.32	1.06	4.30	3.26	4.30	1.44	1.70	-0.29	10
MEAN	2.07	1.58	1.12	1.16	3.52	3.58	4.26	1.38	1.64	-0.50	
7200619A	1.17	0.86	0.74	0.63	2.22	1.72	2.27	0.89	0.97	0.00	10
7200619B	2.04	2.08	0.85	1.03	2.86	4.05	4.12	1.03	1.34	0.14	10
7200619C	1.46	1.39	0.83	0.88	2.87	2.61	3.88	0.95	1.21	0.37	10
MEAN	1.55	1.44	0.81	0.85	2.65	2.80	3.42	0.96	1.17	0.17	
8400603A	0.89	0.63	0.62	0.41	1.61	1.39	1.61	0.67	0.75	0.04	10

TABLE 6.8 (CONT'D)

8400603B	0.96	0.68	0.56	0.46	1.79	1.62	2.21	0.59	0.73	0.08	10
8400603C	0.92	0.71	0.72	0.37	2.03	1.15	2.10	0.71	0.81	0.07	10
MEAN	0.92	0.68	0.63	0.41	1.81	1.39	1.97	0.65	0.76	0.06	
8400601A	0.89	0.73	0.62	0.40	1.83	1.21	1.90	0.64	0.74	0.11	10
8400601B	0.76	1.04	0.55	0.57	1.61	1.83	1.86	0.69	0.80	0.03	10
8400601C	1.09	0.81	0.74	0.43	2.11	1.57	2.56	0.68	0.85	-0.25	10
MEAN	0.91	0.86	0.64	0.47	1.85	1.54	2.11	0.67	0.80	-0.04	
8400625A	1.27	1.81	0.83	1.00	2.51	3.07	3.31	1.10	1.30	-0.21	10
8400625B	1.88	2.57	0.78	1.17	2.96	4.51	4.77	1.02	1.41	0.48	10
8400625C	1.76	1.77	0.94	0.91	3.10	3.29	3.64	1.08	1.31	-0.23	10
MEAN	1.64	2.05	0.85	1.03	2.86	3.62	3.91	1.07	1.34	0.01	
8400622A	2.70	1.35	1.28	1.11	4.33	3.54	4.37	1.41	1.69	-0.42	10
8400622B	0.76	3.58	0.79	1.80	2.76	5.93	6.02	1.52	1.97	-0.76	10
8400622C	1.03	1.61	0.70	1.06	2.40	3.46	3.57	1.06	1.27	-0.19	10
MEAN	1.50	2.18	0.92	1.32	3.17	4.31	4.65	1.33	1.64	-0.46	
8400619A	1.12	1.33	0.77	0.69	2.40	2.22	2.49	0.91	1.04	0.12	10
8400619B	1.34	1.56	0.69	0.98	2.11	3.05	3.08	1.06	1.20	0.04	10
8400619C	0.70	1.91	0.46	1.02	1.24	3.08	3.09	0.92	1.12	-0.04	10
MEAN	1.06	1.60	0.64	0.90	1.92	2.79	2.89	0.97	1.12	0.04	
9600603A	1.30	0.37	0.80	0.26	2.97	0.71	2.97	0.64	0.84	0.02	10
9600603B	1.29	0.94	0.69	0.48	2.42	1.58	2.48	0.69	0.84	0.06	10
9600603C	0.93	0.63	0.46	0.26	1.74	0.87	1.94	0.39	0.53	0.09	10
MEAN	1.17	0.65	0.65	0.33	2.37	1.06	2.47	0.58	0.74	0.06	
9600601A	0.69	0.49	0.52	0.38	1.81	0.99	1.81	0.56	0.65	0.10	10
9600601B	0.97	0.61	0.82	0.44	2.12	1.56	2.37	0.82	0.93	0.17	10
9600601C	0.97	0.36	0.76	0.29	2.00	0.94	2.01	0.74	0.81	0.04	10
MEAN	0.88	0.48	0.70	0.37	1.98	1.16	2.06	0.71	0.80	0.10	
9600625A	1.19	1.02	0.61	0.67	2.28	1.87	2.28	0.80	0.91	0.01	10
9600625B	1.73	1.07	0.84	0.85	2.76	2.28	2.87	1.07	1.19	-0.06	10
9600625C	0.65	1.85	0.55	1.01	1.68	3.24	3.29	0.99	1.15	-0.02	10
MEAN	1.19	1.32	0.67	0.84	2.24	2.46	2.81	0.95	1.08	-0.02	
9600622A	0.72	0.69	0.47	0.38	1.28	1.28	1.67	0.54	0.61	-0.05	10
9600622B	0.85	0.92	0.63	0.58	1.62	1.89	2.03	0.77	0.86	0.04	10
9600622C	1.16	1.48	0.93	1.01	2.85	2.85	3.70	1.16	1.37	-0.64	10
MEAN	0.91	1.03	0.68	0.66	1.92	2.00	2.47	0.82	0.95	-0.22	
9600619A	1.19	1.62	0.53	0.86	1.74	2.83	2.95	0.80	1.01	0.17	10
9600619B	1.13	1.19	0.50	0.74	1.93	2.58	2.61	0.71	0.89	0.02	10
9600619C	0.80	1.83	0.42	0.78	1.42	3.08	3.11	0.64	0.89	0.11	10
MEAN	1.04	1.54	0.48	0.79	1.69	2.83	2.89	0.71	0.93	0.10	

TABLE 6.9. ENDURANCE TEST PROCEDURES

a. After completion of the interchange test, five of the XM4 carbines were each subjected to a 10,000-round endurance test. Firing was divided into 1200-round maintenance intervals, with firing cycles being 120 rounds each before cooling to ambient temperature. Cleaner/lubricant/preservative (CLP) (MIL-L-63460A) was used to lubricate the carbines. Bore measurements were taken at 2400-round increments throughout testing unless changes in dispersion indicated the interval should be decreased to 1200 rounds in order to capture measurements close to actual barrel failure.

b. For purposes of this test, barrel failure occurs when the average extreme spread of three 10-round groups fired at 91.4 meters range from machine rest exceeds 4.5 inches.

c. Dispersion was fired after each cleaning (1200-round intervals). Follow the procedures given in Enclosure 2.

d. Velocity of each projectile was recorded throughout the dispersion firings.

e. The 120-round firing sequence used during the function check, Enclosure 3, was the schedule to be used throughout this test. Cyclic rate for all 3-round bursts fired was recorded.

f. Analysis (ref criterion Ia, Ib, Id, Ie, If, and II). The data for each criterion were summarized and compared against the criterion on a pass/fail basis, except criterion Ia which is an objective assessment.

Additional dispersion analysis was made by comparing results with dispersion limits of 4.8 inches (limit for new M16A2 rifles), 7 inches (OCONUS Limit for used M16A1/M16A2 rifles), and 9 inches (CONUS Limit for used M16A1/M16A2 rifles). In this manner, analysis will be available to support any necessary changes to the ROC to better define allowable increases in dispersion during 10,000 rounds of firing.

TEST DATA, ENVIRONMENTAL/ADVERSE CONDITION TESTS

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ENVIRONMENTAL/ADVERSE CONDITIONS

TABLE 7.1. HIGH TEMPERATURE TEST (+155 °F) DATA FOR XM4 CARBINE SN 6153627 (11)

Test Phase	Test Cycle	Magazine ID No.	Seq	Rd	No. Malfunctions, by Type FFD	FTC	FFR	FEX	FEJ	FBR	OTH	Chg to Wpn	Remarks
					APG Weapon No. 11								
1	2	4	3	29	BOB							1	
1	3	4	2	29		BOB							
1	5	4	3	23	BOB								
1	5	4	3	29	BOB								
1	6	13	1	-									Magazine No. 13 replaces Magazine No. 4.
1	7	13	2	23		BOB						1	
1	7	13	2	25		BOB							
1	7	13	2	29		BOB							
1	7	2	4	29	BOB								
1	8	14	1										Magazine No. 14 replaces Magazine No. 13.
1	1 to 10				4	4	0	0	0	0	0	3	
2	1	2	4	29	BOB								
2	2	1	2	28		BOB						1	
2	2	2	3	14				X				1	
2	2	2	3	29	BOB								
2	3	1	1	28		BOB							
2	3	14	4	29	BOB								
2	4	2	1	29	BOB								
2	4	1	4	6				X					
2	4	1	4	29	BOB								
2	5	2	4	29	BOB								
2	6	2	3	23					FX				
2	6	3	4	27				X					
2	7	14	4	27	BOB								
2	8	2	1	30				X					
2	8	3	2	18				X					
2	8	14	3	18				X					
2	8	1	4	28		BOB							Extractor replaced.
2	9	2	4	29	BOB								
2	10	2	3	29	BOB								
2	10	3	4	17				X					
2	10	3	4	18	STUB								Caused by the test FEX stoppage.

TABLE 7.1 (CONT'D)

Test Phase	Test Cycle	Magazine ID No.	Seq	Rd	No. Malfunctions, by Type FFD	FTC	FFR	FEX	FEJ	FBR	OTH	Chg to Wpn	Remarks
2	1 to 10				10	3	0	7	1	0	0	2	
3	1	14	4	29	BOB								
3	2	3	2	20				X					
3	2	14	3	11				X					
3	3												Install new bolt assembly before firing.
3	4	2	3	29	BOB								
3	5	2	2	29	BOB								
3	6	2	1	27	BOB								
3	7	2	4	29	BOB								
3	1 to 10				5	0	0	2	0	0	0	-	
1 to 3	1 to 10				19	7	0	9	1	0	0	5	

TABLE 7.2. HIGH TEMPERATURE TEST (+155 °F) DATA FOR XM4 CARBINE SN 6153631 (12)

Test Phase	Test Cycle	Magazine ID No.	Seq	Rd	No. Malfunctions, by Type FFD	FTC	FFR	FEX	FEJ	FBR	OTH	Chg to Wpn	Remarks
					APG Weapon No. 12								
1	2	6	1	6					0°			1	
1	6	5	4	29	BOB							1	
1	10	5	4	27	BOB								
1	1 to 10				2	0	0	0	1	0	0	2	3
2	1 to 10				0	0	0	0	0	0	0	0	0
3	2	5	4	29	BOB								
3	3	5	3	30	BOB								
3	4	7	4	29	BOB							1	
3	6	5	4	29	BOB								
3	7	5	3	29	BOB								
3	10	5	4	29	BOB								
3	1 to 10				6	0	0	0	0	0	0	1	
1 to 3	1 to 10				8	0	0	0	1	0	0	3	

TABLE 7.3. HIGH TEMPERATURE TEST (+155 °F) DATA
FOR XM4 CARBINE SN 6153635 (13)

Test Phase	Test Cycle	Magazine ID No.	Seq	Rd	No. Malfunctions, by Type FFD	FTC	FFR	FEX	FEJ	FBR	OTH	Chg to Wpn	Remarks
					APG Weapon No. 13								
1	2	11	2	5					0°			1	
		11	2	9					0°				
		11	3	29	BOB							1	
1	4	10	3	30						X		1	
1	5	9	1	7					0°			1	
1	5	12	4	1	COEC								Bolt latch release during insertion of magazine in rifle.
1	6	10	1	11					0°				
1	7	11	1	3					0°				
1	9	12	4	10					0°				
1	10	10	1	28					0°				
1	1 to 10				2	0	0	0	7	1	0	4	
2	1	9	3	30						X		1	
2	6	11	4	1	STUB							1	
2	8	10	1	14					0°				
2	10	12	1	2					0°				
2	1 to 10				1	0	0	0	2	1	0	2	
3	3	11	1	5					0°				
3	4	12	1	13					0°				
3	4	11	4	8					0°				
3	5	-	-	-									One incipient FEX case found during fired case inspection.
3	6	10	1	11					0°				
3	7	11	1	20					0°				
3	8	12	1	2					0°				
3	8	9	2	1					0°				
3	8	9	2	2					0°				
3	9	9	1	2					0°				
3	10	-	-	-									Loose bolt carrier key found during inspection after firing. Bolt carrier and key assembly replaced.
3	1 to 10				0	0	0	0	9	0	0		
1 to 3	1 to 10				3	0	0	0	18	2	0	6	

TABLE 7.4. FUNCTIONING PERFORMANCE DATA FOR LOW TEMPERATURE TEST OF XM4 CARBINE SN 6153627 (11)

1200 Rd Test Phase	120 Rd Test Cycle	Magazine ID No.	Seq	Rd	No. Malfunctions, by Type FFD	FTC	FFR	FEX	FEJ	FBR	OTH	Chg to Wpn	Remarks
I	4	14	1	1			LI					1	
	5	1	1	1			LI						
	6	2	1	1			VLI						
	7	3	1	1			VLI						
	7	3	1	2			LI						
	9	1	1	2		FTL							
	9	1	1	3		FTL							
	9	1	1	4		FTL							
	9	1	1	7		FTL							
	9	1	1	22		FTL							
	9	1	1	29		FTL							
	9	14	4			X							
	10	14	3	2			FTR						
				7			FTR						
				14			FTR						
Total	1 to 10	-	-	-	0	7	8		0	0	0	1	
II	3	3	1	1	FS							1	
	4	14	1	1	FS								
	5	1	1	1	FS								
	6	2	1	1	FS								Butt impact.
	7	3	1	1	FS								
	7	3	1	1			NI						
	7	2	4	22		X							CIL gun after end of cycle 7.
	8	14	1	1		FL						1	
	8	2	3	20			LI						DNF.
	9	1	1	1		FL							Butt impact.
	9	1	1	1			NI						DNF.
	9	1	1	2			LI						DNF.
	10	2	1	1	FS								
Total	1 to 10	-	-	-	6	3	4		0	0	0	2	
III	3	3	1	1		FL						1	
	4	14	1	1	FS								
	4	14	1	1			LI						DNF.
	4	14	1	2			NI						Apparent failure to lock.
	5	1	1	1							FUB		Butt impact to unlock bolt.
	5	1	1	1		FL							
	5	1	1	2		FL							
	5	1	1	3-7							UCF		Fired 5-rd burst.

TABLE 7.4 (CONT'D)

1200 Rd Test Phase	120 Rd Test Cycle	Magazine ID No.	Seq	Rd	No. Malfunctions, by Type FFD	FTC	FFR	FEX	FEJ	FBR	OTH	Chg to Wpn	Remarks
	6	2	1	1							FUB		Butt impact to unlock bolt.
	7	3	1	1							FUB		Butt impact to unlock bolt.
	7	3	1	1			LI						DNF.
	7	3	1	2		FL							DNF. BCA would not chamber rd.
	7	3	1	5			FRT						Trigger stuck to rear after 3-rd burst.
	7	3	1	8			FRT						Trigger stuck to rear after 3-rd burst.
	7	1	3	1-2	DF								Loading error DNF. 2 rds. CIL gun after cycle 7
	8	14	1	1			VLI						DNF.
	8	14	1	2			LI						DNF.
	8	14	1	3			LI						DNF.
	8	14	1	4			LI						DNF.
	9	1	1	1							FUB		Butt impact to unlock bolt.
III	9	1	1	1			LI						DNF.
	9	1	1	2			LI						DNF.
	9	1	1	3			LI						DNF.
	10	2	1	1							FUB		Butt impact to unlock bolt.
	10	2	1	1			LI						DNF.
	10	2	1	2			LI						DNF.
	10	2	1	3			LI						DNF.
	10	3	2	1	BOB								
	10	14	3	1		X							
Total 1 to 10					3	5	15	0	0	0	6	2	
Overall total I-III 1 to 10					9	15	27	0	0	0	6	5	

TABLE 7.5. FUNCTIONING PERFORMANCE DATA FOR LOW TEMPERATURE TEST OF XM4 CARBINE SN 6153631 (12)

1200 Rd Test Phase	120 Rd Test Cycle	Magazine ID No.	Magazine ID Seq	Magazine ID Rd	No. Malfunctions, by Type FFD	FTC	FFR	FEX	FEJ	FBR	OTH	Chg to Wpn	Remarks
I	2	6	1	29	BOB							1	
	2	7	2	25	COEC								
	3	6	4	29	FRM								
	5	6	2	29	BOB								Replace magazine No. 6 with No. 15.
	6	15	1	1			LI						DNF.
	6	15	1	2			LI						DNF.
	7	7	1	1			NI						Round fired on second trial.
	7	8	2	1/2	DF								Reloaded.
	7	8	2	1/2	DF								Removed all rounds from Magazine No. 8 and placed in No. 16 then fired ok.
	8	16	1	1			LI						DNF.
Total	1 to 10	-	-	-	6	0	4	0	0	0	0	1	
II	3	7	1	1		X						1	
	4	16	1	1	FS								
	4	16	1	1			LI						
	5	5	1	1	FS								
	6	15	1	1	FS								Butt impact.
	7	7	1	1	FS								
	7	7	1	1		X							DNF. CIL gun after end of cycle 7.
	9	5	1	1	FS							1	
	10	15	1	1	FS								
	10	15	1	1-5							UCF		Fired rounds 4 and 5 on release of trigger.
Total	1 to 10	-	-	-	6	2	1	0	0	0	1	2	
III	2	6	1	1-28							UCF		Seven 4-round bursts.
	2	7	2	1-28							UCF		Seven 4-round bursts.
	2	8	3	1-2	DF								Loading error.
	3	10	2	1-2	DF								Loading error.
	4	16	1	1	FS							1	
	4	16	1	1		FL							

TABLE 7.5 (CONT'D)

1200 Rd Test Phase	120 Rd Test Cycle	Magazine ID No.	Seq	Rd	No. Malfunctions, by Type FFD	FTC	FFR	FEX	FEJ	FBR	OTH	Chg to Wpn	Remarks
	5	5	1	1							FUB		Butt impact to unlock bolt.
	5	5	1	1			NI						DNF fouling covered primer.
	6	15	1	1							FUB		Butt impact to unlock bolt .
	6	15	1	1			LI						Refired ok.
	6	16	3	30	BOB								DNF.
	7	7	1	1							FUB		Butt impact to unlock bolt.
	7	7	1	1			LI						DNF.
													CIL gun after cycle No. 7.
	8	8	1	1		X						1	
	8	8	1	1			NI						DNF.
	9	5	1	1	PS								
	9	5	1	1			NI						DNF.
	9	7	3	1		X							
	9	8	4	1-2	DF								Loading error DNF round No. 2.
	10	15	1	1							FUB		Butt impact to unlock bolt DNF.,
	10	15	1	1			LI						fouling on primer.
Total	1 to 10	-	-	-	6	3	6	0	0	0	6	2	
Overall Total I-III	1 to 10	-	-	-	18	5	11	0	0	0	7	5	

TABLE 7.6. FUNCTIONING PERFORMANCE DATA FOR LOW TEMPERATURE TEST OF XM4 CARBINE SN 6153635 (13)

1200 Rd Test Phase	120 Rd Test Cycle	Magazine ID No.	Seq	Rd	No. Malfunctions, by Type FFD	FTC	FFR	FEX	FEJ	FBR	OTH	Chg to Wpn	Remarks
I	1	9	1	1			LI					1	
	3	11	1	1			LI						
	5	11	3	1	STUB								
	6	12	3	0						X			Caused by magazine No. 11.
	6	9	4	0						X			Caused by magazine No. 12.
	6	9	4	30						X			
	7	10	4	30						X			
	9	10	2	30						X			
	10	12	3	30						X			
Total	1 to 10				1	0	2	0	0	6	0	1	
II	1	10	2	30						X		1	
	2	10	1	1			LI						DNF.
	2	10	1	1					0°				
	2	10	1	30						X			
	2	9	4	30						X			
	3	11	1	1	FS								
	3	12	2	30						X			
	3	9	3	30						X			
	4	12	1	1	FS								
	4	10	3	30						X			
	5	9	1	1	FS								
	6	10	1	1	FS								
	6	10	1	2					0°				CR = 386.
	6	11	2	30						X			
	7	11	1	1	FS								Butt impact.
	7	11	1	2	FS								
	7	11	1	3	FS								
	7	11	1	4			NI						
	7												CIL gun after end of cycle 7.
	8	12	1	1		FL						1	
	9	9	1	1	FS								
	10	10	1	1	FS								
	10	10	1	1			LI						DNF. Replaced magazine No. 10 with No. 17 at end of cycle.
Total	1 to 10	-	-	-	9	1	3	0	2	7	0	3	

TABLE 7.6 (CONT'D)

1200 Rd Test Phase	120 Rd Test Cycle	Magazine ID No.	Seq	Rd	No. Malfunctions, by Type FFD	FTC	FFR	FEX	FEJ	FBR	OTH	Chg to Wpn	Remarks
I	1	9	1	2	X								Magazine not fully seated.
	1	9	1	30						X		1	
	2	17	1	1		FL							
	2	11	2	30						X			
	3	12	2	30						X			
	3	9	3	30						X			
	4	12	1	1	FS								
	4	12	1	1		FL							
	5	9	1	1							FUB		Butt impact to unlock bolt.
	5	9	1	1			NI						DNF.
	5	17	2	30						X			
	6	17	1	1							FUB		Butt impact to unlock bolt
	7	11	1	1							FUB		Butt impact to unlock bolt
	7	11	1	1			LI						DNF.
	7	11	1	2			LI						DNF.
	7	17	4	1-2	DF								DNF 2 rounds loading error CIL gun after cycle 7.
	8	12	1	1		X							
	8	12	1	1			NI						DNF.
	8	12	1	2			NI						DNF.
	9	9	1	1							FUB		Butt impact to unlock bolt.
	9	9	1	1		X							
	9	9	1	2		X							
	10	17	1	1							FUB		Butt impact to unlock bolt.
	10	17	1	1			LI						DNF.
	10	17	1	2		FL							
	10	17	1	3		FL							
	10	11	2	1			LI						DNF.
	10	12	3	1	BOB								
Total	1 to 10	-	-	-	4	7	7	0	0	5	5	1	
Overall Total I-III	1 to 10	-	-	-	14	8	12	0	2	18	5	5	

TABLE 7.7. FUNCTIONING PERFORMANCE DATA FOR ICING TEST OF XM4 CARBINE SN 6153627 (11)

1200 Rd Test Phase	120 Rd Test Cycle	Magazine ID No.	Seq	Rd	No. Malfunctions, by Type FFD	FTC	FFR	FEX	FEJ	FBR	OTH	Chg to Wpn	Remarks
I	1	25	1	1							FSM	1	
	1	25	1	1			LI					1	DNF.
	1	25	1	1							FRB	1	Charging handle frozen.
	1	25	1	2-5							UCF	1	4-round burst.
	1	25	1	30						X		1	Bolt stop frozen.
	1	26	2	30			LI					1	DNF.
	1	27	3	30									
	1	28	4	30									
Total	-	-	-	120	0	0	2	0	0	1	3	6	

TABLE 7.8. FUNCTIONING PERFORMANCE DATA FOR ICING TEST OF XM4 CARBINE SN 6153631 (12)

1200 Rd Test Phase	120 Rd Test Cycle	Magazine ID No.	Seq	Rd	No. Malfunctions, by Type FFD	FTC	FFR	FEX	FEJ	FBR	OTH	Chg to Wpn	Remarks
I	1	29	1	1							FSM	1	
	1	29	1	1		X							
	1	29	1	30						X		1	Frozen bolt stop.
	1	29	1	30							FRM	1	Frozen magazine latch.
	1	30	2	30									
	1	31	3	30									
	1	32	4	30									
Total	-	-	-	120	0	1	0	0	0	1	2	3	

TABLE 7.9. FUNCTIONING PERFORMANCE DATA FOR ICING TEST OF XM4 CARBINE SN 6153631 (13)

1200 Rd Test Phase	120 Rd Test Cycle	Magazine ID No.	Seq	Rd	No. Malfunctions, by Type FFD	FTC	FFR	FEX	FEJ	FBR	OTH	Chg to Wpn	Remarks
I	1	33	1	1							FSM	1	
	1	33	1	4			LI					1	DNF.
	1	33	1	6			LI					1	DNF.
	1	33	1	8			LI					1	DNF.
	1	33	1	30			LI					1	DNF.
	1	33	1	30							FRM	1	
	1	34	2	30			LI						DNF.
	1	35	3	30									
	1	36	4	30									
	2	36	1	1-5									Fired previous 5 FFR's ok.
Total	-	-	-	120	0	0	5	0	0	0	2	6	

TABLE 7.10. FUNCTIONING PERFORMANCE DATA FOR ATTITUDES TEST OF XM4 CARBINE SN 6153611 (8)

1200 Rd Test Phase	120 Rd Test Cycle	Magazine ID No.	Seq	Rd	TOT Rd	No. Malfunctions, by Type FFD	FTC	FFR	FEX	FEJ	FBR	OTH	Chg to Wpn	Remarks
I	1	77	1	30	30			LI					1	Note - 1, 13.
		-	-	-	120									
	2	-	-	-	240									Note - 2.
	3	80	2	1	241	PS								Note - 3.
		77	3	1	271	PS								
		78	4	1	301	PS								
		-	-	-	360									
	4	80	2	1	391	PS								Note - 4.
		77	3	1	421	PS								
		78	4	1	451	PS								
		-	-	-	480									
	5	-	-	-	600									Note - 5.
	6	78	3	1	661	PS								Note - 6.
		-	-	-	720									CIL gun.

TABLE 7.10 (CONT'D)

1200 Rd Test Phase	120 Rd Test Cycle	Magazine ID No.	Seq	Rd	TOT Rd	No. Malfunctions, by Type FFD	FTC	FFR	FEX	FEJ	FBR	OTH	Chg to Wpn	Remarks
II	7	-	-	-	840									Note - 7.
	8	-	-	-	960									Note - 8.
	9	-	-	-	1080									Note - 9.
	10	80	2	1	1111	PS								Note - 10.
		-	-	-	1200									
	11	80	1	11	1211			IN					1	Note - 11, 13.
		-	-	-	1320									
	12	78	2	1	1351	PS								Note - 12.
		79	3	1	1381	PS								
Totals		-	-	-	1440	10	0	2	0	0	0	0	2	

TABLE 7.11. FUNCTIONING PERFORMANCE DATA FOR ATTITUDES TEST OF XM4 CARBINE SN 6153613 (7)

1200 Rd Test Phase	120 Rd Test Cycle	Magazine ID No.	Seq	Rd	TOT Rd	No. Malfunctions, by Type FFD	FTC	FFR	FEX	FEJ	FBR	OTH	Chg to Wpn	Remarks
I	1	-	-	-	120									Note - 1.
	2	-	-	-	240									Note - 2.
	3	79	1	1	241					0°			1	Note - 3.
		80	2	1	271	PS								
		77	3	1	301	PS								
		-	-	-	360									
	4	80	2	1	391	PS								Note - 4.
		77	3	1	421	PS								
		78	4	1	451	PS								
		-	-	-	480									
	5	-	-	-	600									Note - 5.
	6	-	-	-	720									Note - 6.
														CIL gun.
II	7	78	3	1	781	PS								Note - 7.
		-	-	-	840									
	8	-	-	-	960									Note - 8.
	9	-	-	-	1080									Note - 9.
	10	80	2	1	1111	PS								Note - 10.
		77	3	1	1141	PS								
		-	-	-	1200									
	11	80	1	16	1216			IN					1	Note - 11, 13.
				21	1221			IN					1	Note - 13.
		77	2	25	1255			IN					1	Note - 13.
		-	-	-	1320									
	12	78	2	1	1351	PS								Note - 12.
		79	3	1	1381	PS								
Total		-	-	-	1440	10	0	3	0	1	0	0	4	

TABLE 7.12. FUNCTIONING PERFORMANCE DATA FOR ATTITUDES TEST OF XM4 CARBINE SN 6153615 (6)

1200 Rd Test Phase	120 Rd Test Cycle	Magazine ID No.	Magazine ID Seq	Magazine ID Rd	TOT Rd	No. Malfunctions, by Type FFD	FTC	FFR	FEX	FEJ	FBR	OTH	Chg to Wpn	Remarks
I	1	-	-	-	120									Note - 1.
	2	-	-	-	240									Note - 2.
	3	-	-	-	360									Note - 3.
	4	80	2	1	391	PS								Note - 4.
		77	3	1	421	PS								
		78	4	1	451	PS								
		-	-	-	480									
	5	-	-	-	600									Note - 5.
	6	-	-	-	720									Note - 6.
														CIL gun.
														Note - 7.
II	7	-	-	-	840									Note - 8.
	8	-	-	-	960									Note - 9.
	9	79	2	1	991	PS								
		-	-	-	1080									Note - 10.
	10	77	3	1	1141	PS								
		-	-	-	1200									Note - 11.
	11	-	-	-	1320									Note - 12.
	12	78	2	1	1351	PS								
Total		-	-	-	1440	6	0	0	0	0	0	0	0	

Note - 1: Top side up, normal hold, 0° elevation.
Note - 2: Top side up, normal hold, -80° elevation.
Note - 3: Top side up, normal hold, +80° elevation.
Note - 4: Top side up, loose hold, +80° elevation.
Note - 5: Top side up, loose hold, -80° elevation.
Note - 6: Top side up, loose hold, 0° elevation.
Note - 7: Right side up, normal hold, 0° elevation.
Note - 8: Left side up, normal hold, 0° elevation.
Note - 9: Up side down, normal hold, 0° elevation.
Note - 10: Right side up, loose hold, 0° elevation.
Note - 11: Left side up, loose hold, 0° elevation.
Note - 12: Up side down, loose hold, 0° elevation.
Note - 13: Misfired rounds fired on second trial.

TABLE 7.13. FUNCTIONING PERFORMANCE DATA FOR STATIC DUST TEST OF XM4 CARBINES

120-Rd Test Cycle	Magazine ID No.	Seq	Rd	TOT Rd	Malfunctions, by Type FFD	FTC	FFR	FEX	FEJ	FBR	OTH	Chg to Wpn	Remarks
					Carbine SN 6153637 (14)								
1	3	3	2	62	COEC								
Subtotal	-	-	-	120	1	0	0	0	0	0	0	0	
					Carbine SN 6153639 (15)								
1	5	1	2	2	PS							1	
			3	3	PS							1	
	7	3	1	61	PS								
	8	4	1	91	PS								
Subtotal	-	-	-	120	4	0	0	0	0	0	0	2	
					Carbine SN 6153641 (16)								
Subtotal	-	-	-	120	0	0	0	0	0	0	0	0	
Total	-	-	-	360	5	0	0	0	0	0	0	2	

TABLE 7.14. FUNCTIONING PERFORMANCE DATA FOR DYNAMIC DUST TEST OF XM4 CARBINE SN 6153637 (14)

120-Rd Test Cycle	Magazine ID No.	Seq	Rd	TOT Rd	Malfunctions, by Type FFD	FTC	FFR	FEX	FEJ	FBR	OTH	Chg to Wpn	Remarks
1	3	3	3	63	PS							Not	Note 5.
			5	65					0°			Not	
			6	66					0°			Not	
	4	4	2	92					90°			Not	
			3	93					0°			Not	
			12	102					0°			Not	
			14	104					0°			Not	
			16	106					90°			Not	
			17	107					0°			Not	
Total	-	-	-	120	1	0	0	0	8	0	0	0	Note 1.
1R	-	-	-	120									Note 5 2.26 min.
2R	-	-	-	240									Note 5 2.42 min.
3R	3	3	1	301	PS								Note 5.
	4	4	1	331	PS								
	-	-	-	360									2.35 min.

TABLE 7.14 (CONT'D)

120-Rd Test Cycle	Magazine ID No.	Seq	Rd	TOT Rd	Malfunctions, by Type FFD	FTC	FFR	FEX	FEJ	FBR	OTH	Chg to Wpn	Remarks
													Note 5.
4R	2	2	1	391	PS				90°			1-1	
	3	3	1	421	PS				0°			1	
			2	422					0°			1-1	
	4	4	1	451	PS				0°			1	
			2	452					0°			1	Note 3.
			3	453									3.41 min.
	-	-	-	480					0°			1	Note 5.
SR	9	1	1	481								1	
			2	482	PS								
	10	2	1	511	PS							1	
			2	512	PS								
	11	3	1	541	PS								
	12	4	1	571	PS							1	
			2	572	PS								
Total	-	-	-	600	11	0	0	0	6	0	0	9	3.07 min total test time = 13.51 min.

TABLE 7.15. FUNCTIONING PERFORMANCE DATA FOR DYNAMIC DUST TEST OF XM4 CARBINE SN 6153639 (15)

120-Rd Test Cycle	Magazine ID No.	Seq	Rd	TOT Rd	Malfunctions, by Type FFD	FTC	FFR	FEX	FEJ	FBR	OTH	Chg to Wpn	Remarks
													Note 5
1	-	-	-	120									2.30 min.
												1	Note 5.
2	6	2	2	152	PS							1	
			3	153	PS							1	
			4	154	PS							1	
			30	180						X			3.10 min.
	-	-	-	240									Note 5.
3	7	3	1	301	PS							1	
			2	302	PS							1	
			3	303	PS								
	8	4	1	331	PS								2.51 min.
	-	-	-	360									Note 5.
4	7	3	1	421	PS								
	8	4	1	451	PS								2.40 min.
	-	-	-	480									Note 5.
5	2	2	1	511	PS							1	
			2	512	PS								
	3	3	1	541	PS								
	4	4	1	571	PS							1	
			2	572	PS							1	
			3	573	PS								
Total	-	-	-	600	15	0	0	0	0	1	0	9	3.12 min total test time = 13.43 min.

TABLE 7.16. FUNCTIONING PERFORMANCE DATA FOR DYNAMIC DUST TEST OF XM4 CARBINE SN 6153641 (16)

120-Rd Test Cycle	Magazine ID No.	Seq	Rd	TOT Rd	Malfunctions, by Type FFD	FTC	FFR	FEX	FEJ	FBR	OTH	Chg to Wpn	Remarks
											UCF	1	Notes 2, 5
1	11	3	7	67									2.35 min.
				120								1	Note 5.
2	2	2	2	152	PS							1	
	3	3	2	182	PS				0°			1	
	4	4	1	211								1	
			2	212				RS					3.10 min.
	-	-	-	240									Note 5.
3	10	2	1	271	PS								
	11	3	1	301	PS							1	
			3	303	PS								
	12	4	1	331	PS							1	
			2	332	PS							1	
			4	334	PS								2.50 min.
	-	-	-	360									Note 5.
4	11	3	1	421	PS								
	12	4	1	451	PS								2.33 min.
	-	-	-	480									Note 5.
5	5	1	1	481	PS								
	6	2	1	511	PS							1	
			2	512	PS							1	
			4	514	PS								
	7	3	1	541	PS								
			2	542	PS								
	8	4	1	571	PS							1	
			2	572	PS							1	
			6	576	STUB							1	
			7	577	PS							1	
			8	578	PS							1	
			9	579	PS							1	
Total	-	-	-	600	22	0	0	1	1	1	1	15	3.46 min.

TABLE 7.17. FUNCTIONING PERFORMANCE DATA FOR DYNAMIC DUST TEST OF M16A2 RIFLE SN 6041351 (8M)

120-Rd Test Cycle	Magazine ID No.	Seq	Rd	TOT Rd	Malfunctions, by Type FFD	FTC	FFR	FEX	FEJ	FBR	OTH	Chg to Wpn	Remarks
													Note 4.
1	2	2	1	31	PS								
	3	3	1	61	PS								
	4	4	1	91	PS								2.57 min.
	-	-	-	120									Note 5.
2	6	2	1	151	PS								
	7	3	1	181	PS							1	
			3	183	PS							1	
			4	184	PS							1	
			6	186	PS							-	
	8	4	1	221	PS							1	
			4	224	PS								3.21 min.
				240									Note 6.
3	10	2	1	271	PS								
	11	3	1	301	PS								
	12	4	1	331	PS								2.47 min.
	-	-	-	360									Note 6.
4	2	2	1	391	PS								
	3	3	1	421	PS								
	4	4	1	451	PS								2.39 min.
	-	-	-	480									Note 5.
5	5	1	1	481	PS								
	6	2	1	511	PS								
	7	3	1	541	PS								
	8	4	1	571	PS								
Total	-	-	-	600	20	0	0	0	0	0	0	4	2.39 min total test time 13.01 min.

Note/Remarks for Tables 7.14 - 7.17.

Note 1: Stopped test - applied lubrication (CLP) to top round in magazine. Fired remaining 13 rounds without further incident. Total firing time was 5.28 minutes. Cleaned and relubricated weapon. A sticking ejector was found. This test was repeated. All magazines (No. 1 to 12) were cleaned after each firing cycle.

Note 2: Fired one 4-round burst (round 4 to 7) followed by a 3-round burst on the next trigger pull.

Note 3: Impacted dirt in chamber of carbine dry-brushed out after last FEJ stoppage. The problem was corrected.

Note 4: M855 cartridge lot No. WCC86A030-053 used.

Note 5: M855 cartridge lot No. WCC85L030-039 used.

Note 6: The M855 ball cartridge from 4/1 ball/tracer mix functional lot No. LC85D300S337 used.

Remarks: One set of 12 magazines (No. 31 to 13) were used throughout testing. Four magazines were used to fire each 120 round cycle. After firing, they were cleaned prior to reuse. The weapons were not cleaned during the 600-round test, except as noted.

TABLE 7.18. FUNCTIONING PERFORMANCE DATA FOR MUD TEST OF XM4 CARBINES

120-Rd Test Cycle	Magazine ID No.	Seq	Rd	TOT Rd	Malfunctions, by Type FFD	FTC	FFR	FEX	FEJ	FBR	OTH	Chg to Wpn	Remarks
					Carbine SN 6153637 (14)								
1	15	3	8	68		X						1	
	16	4	3	93		X						1	
			5	95		X						1	
Subtotal	-	-	-	120	0	3	0	0	0	0	0	3	Note 1.
					Carbine SN 6153639 (15)								
1	19	3	1	1		X						1	
Subtotal	-	-	-	120	0	1	0	0	0	0	0	1	Note 2.
					Carbine SN 6153641 (16)								
1	23	3	1	61		X							
	24	4	1	91		X							
			4	94		X						1	
			7	97		X						1	
			13	103		X						1	
			19	109		X						1	
Subtotal	-	-	-	120	0	6	0	0	0	0	0	4	Note 3.
Total	-	-	-	360	0	10	0	0	0	0	0	8	

Notes/Remarks

Note 1: Magazine 13 to 16 used in that order. Only the first magazine was mud-conditioned with the carbine.

Note 2: Magazines 17 to 20 used in that order. Only the first magazine was mud-conditioned with the carbine.

Note 3: Magazine 21 to 24 used in that order. Only the first magazine was mud-conditioned with the carbine.

TABLE 7.19. FUNCTIONING PERFORMANCE DATA FOR SIMULATED RAIN TEST OF XM4 CARBINE SN 6153637 (14)

240-Rd Test Phase	120-Rd Test Cycle	Magazine ID No.	Seq.	Rd	Tot Rd	Malfunctions, by Type FFD	FTC	FFR	FEX	FEJ	FBR	OTH	Chg to	Remarks
1	1	-	-	-	120									
1	2	-	-	-	240									
2	1	16	4	1	331	PS								
		-	-	-	360									
2	2	-	-	-	480									
3	1	14	2	1	511	PS								
		-	-	-	600									
3	2	-	-	-	720									
Total					720	2	0	0	0	0	0	0	0	

Notes: New magazines used at start of test.

TABLE 7.20. FUNCTIONING PERFORMANCE DATA FOR SIMULATED RAIN TEST OF XM4 CARBINE SN 6153639 (15)

240-Rd Test Phase	120-Rd Test Cycle	Magazine ID No.	Seq.	Rd	Tot Rd	Malfunctions, by Type FFD	FTC	FFR	FEX	FEJ	FBR	OTH	Chg to	Remarks
1	1	-	-	-	120									
1	2	-	-	-	240									
2	1	-	-	-	360									
2	2	-	-	-	480									
3	1	-	-	-	600									
3	2	-	-	-	720									
Total					720	0	0	0	0	0	0	0	0	

Notes: New magazines used at start of test.

TABLE 7.21. FUNCTIONING PERFORMANCE DATA FOR SIMULATED RAIN TEST OF XM4 CARBINE SN 6153641 (16)

240-Rd Test Phase	120-Rd Test Cycle	Magazine ID No.	Seq.	Rd	Tot Rd	Malfunctions, by Type FFD	FTC	FFR	FEX	FEJ	FBR	OTH	Chg to	Remarks
1	1	-	-	-	120									
1	2	-	-	-	240									
2	1	-	-	-	360									
2	2	-	-	-	480									
3	1	-	-	-	600									
3	2	-	-	-	720									
Total					720	0	0	0	0	0	0	0	0	

Notes: New magazines used at start of test.

TABLE 7.22. FUNCTIONING PERFORMANCE DATA FOR SALTWATER IMMERSION TEST OF XM4 CARBINE SN 6153637 (14)

Test Day	120-Rd Test Cycle	Magazine ID No.	Seq.	Rd	Tot Rd	Malfunctions, by Type FFD	FTC	FFR	FEX	FEJ	FBR	OTH	Chg to	Remarks
1	1	-	-	-	120									
3	2	-	-	-	240									
5	3	40	4	1	331	PS								
		-	-	-	360									
9	4	61	1	1	361					0°				
		64	4	1	451	PS			RS				1	Note 3
				3	453				RS				1	Note 3
		-	-	-	480									
10	5	49	1	1	481	PS				0°			1	
		50	2	1	511	PS								
		51	3	1	541	PS								
Total					600	5	0	0	2	2	0	0	4	

See notes at end of Table 7.24.

TABLE 7.23. FUNCTIONING PERFORMANCE DATA FOR SALTWATER IMMERSION TEST OF XM4 CARBINE SN 6153639 (15)

Test Day	120-Rd Test Cycle	Magazine ID No.	Seq.	Rd	Tot Rd	Malfunctions, by Type FFD	FTC	FFR	FEX	FEJ	FBR	OTH	Chg to	Remarks
1	1	-	-	-	120									
3	2	-	-	-	240									
5	3	-	-	-	360									
9	4	66	2	1	391	PS								
		67	3	1	421	PS								
		68	4	1	451	PS			RS				1	Note 3
				2	452				RS				1	Note 3
				4	454				RS				1	Note 3
				5	455				RS				1	Note 3
		-	-	-	480									
10	5	54	2	1	511	PS								
		55	3	1	541	PS								
Total		-	-	-	600	5	0	0	4	0	0	0	4	

See notes at end of Table 7.24.

TABLE 7.24. FUNCTIONING PERFORMANCE DATA FOR SALTWATER IMMERSION TEST OF XM4 CARBINE SN 6153641 (16)

Test Day	120-Rd Test Cycle	Magazine ID No.	Seq.	Rd	Tot Rd	Malfunctions, by Type FFD	FTC	FFR	FEX	FEJ	FBR	OTH	Chg to	Remarks
1	1	-	-	-	120									
3	2	-	-	-	240									
5	3	45	1	1	241	PS								Note 1
		46	2	1	271	PS								
		-	-	-	360									
9	4	69	1	1	361	PS			RS				1	Note 3
		70	2	1	391	PS								
				2	392		X						1	Note 2
		71	3	1	421		X							Note 2
				2	422			LI					1	
		72	4	1	451	PS			RS				1	Note 3
				2	452				RS				1	Note 3
		-	-	-	480									
10	5	57	1	1	481	PS	X							
				2	482	PS							1	
				3	483	PS							1	
		58	2	1	511	PS								
		59	3	1	541	PS								
		60	4	1	571	PS								
Total					600	11	3	1	3	0	0	0	7	

Note 1: Bolt retracted hard during initial charging of weapon.
Note 2: Barrel cleaned with chamber brush to remove excess salt buildup.
Note 3: Use of a cleaning rod was required to clear the FEX M855 ball cartridge lot No. WCC85L030-039 used throughout this test. Magazines were loaded and immersed in the saltwater at the sme time as the carbines. No maintenance of weapons or magazines was done during the 10-day test, except as noted.

TABLE 7.25. FUNCTIONING PERFORMANCE DATA FOR UNLUBRICATED TEST OF XM4 CARBINE SN 6153611 (8)

120-Rd Test Cycle	Magazine ID No.	Seq.	Rd	Tot Rd	Malfunctions, by Type FFD	FTC	FFR	FEX	FEJ	FBR	OTH	Charge to Weapon	Remarks
1	2	2	2	32	PS							1	Note 1
	4	4	1	91	PS								
			4	94	PS							1	
			5	95	PS							1	
			6	96	PS							1	
			8	98	PS							1	
			9	99	PS							1	
			10	100	PS							1	
			11	111	PS							1	
			12	112	PS							1	
			14	114	PS							1	
	-	-	-	120									
2	2	2	1	151	PS								
			2	152	PS							1	
			3	153	PS							1	
			4	154	PS							1	
			5	155	PS							1	
			6	156	PS							1	
			7	157	PS							1	
			8	158	PS							1	
			9	159	PS							1	
			10	160	PS							1	
			11	161	PS							1	
	3	3	1	181	PS								
	4	4	1	211	PS								
			2	212	PS							1	
			3	213	PS							1	
			4	214	PS							1	
			5	215	PS							1	
			6	216	PS							1	
			7	217	PS							1	
			8	218	PS							1	
			9	219	PS							1	
			10	220	PS							1	
			11	221	PS							1	
			12	222	PS							1	
			13	223	PS							1	
			14	224	PS							1	
			15	225	PS							1	
			16	226	PS							1	
			17	227	PS							1	
			18	228	PS							1	
			19	229	PS							1	
			20	230	PS							1	
			21	231	PS							1	
			22	232	PS							1	
			23	233	PS							1	

TABLE 7.25 (CONT'D)

120-Rd Test Cycle	Magazine ID No.	Magazine ID Seq.	Rd	Tot Rd	Malfunctions, by Type FFD	FTC	FFR	FEX	FEJ	FBR	OTH	Charge to Weapon	Remarks
			24	234	PS							1	
			25	235	PS							1	
	-	-	-	240									
3	1	1	1	241	PS								
			2	242	PS							1	
			3	243	PS							1	
			4	244	PS							1	
			5	245	PS							1	
	2	2	1	271	PS								
	4	4	1	331	PS								
	-	-	-	360									
4	1	1	1	361	PS								
			2	362	PS							1	
			3	363	PS							1	
			4	364	PS							1	
			5	365	PS							1	
			6	366	PS							1	
			7	367	PS							1	
	2	2	1	391	PS								
			2	392	PS							1	
			3	393	PS							1	
			4	394	PS							1	
			5	395	PS							1	
			6	396	PS							1	
			7	397	PS							1	
	3	3	1	421	PS								
	4	4	1	451	PS								
			4	454	PS							1	
			5	455	PS							1	
			7	457	PS							1	
			8	458	PS							1	
			9	459	PS							1	
			10	460	PS							1	
			11	461	PS							1	
			12	462	PS							1	
			13	463	PS							1	
			14	464	PS							1	
			15	465	PS							1	
			16	466	PS							1	
			17	467	PS							1	
			18	468	PS							1	
			19	469	PS							1	
			20	470	PS							1	
			21	471	PS							1	
			22	472	PS							1	
			23	473	PS							1	
			24	474	PS							1	

TABLE 7.25 (CONT'D)

120-Rd Test Cycle	Magazine ID No.	Seq.	Rd	Tot Rd	Malfunctions, by Type FFD	FTC	FFR	FEX	FEJ	FBR	OTH	Charge to Weapon	Remarks
			25	475	PS							1	
			26	476	PS							1	
			27	477	PS							1	
			28	478	PS							1	
			29	479	PS							1	
			30	480	PS							1	
5	1	1	1	481	PS								
			2	482	PS							1	
			3	483	PS							1	
			4	484	PS							1	
			5	485	PS							1	
	2	2	1	511	PS								
	3	3	1	541	PS								
	4	4	1	571	PS								
	-	-	-	600									
6	2	1	1	601	PS	X							Note 2
			3	603	PS							1	
			4	604	PS							1	
			5	605	PS							1	
			6	606	PS							1	
			7	607	PS							1	
			8	608	PS							1	
			9	609	PS							1	
			10	610	PS							1	
			11	611	PS							1	
			12	612	PS							1	
			13	613	PS							1	
			14	614	PS							1	
			15	615	PS							1	
			16	616	PS							1	
			17	617	PS							1	
			18	618	PS							1	
			19	619	PS							1	
			20	620	PS							1	
			21	621	PS							1	
			22	622	PS							1	
			23	623	PS							1	
			24	624	PS							1	
			25	625	PS							1	
			26	626	PS							1	
			27	627	PS							1	
			28	628	PS							1	
			29	629	PS							1	
			30	630	PS							1	
	3	2	2	632	PS							1	
			3	633	PS							1	
			4	634	PS							1	

TABLE 7.25 (CONT'D)

120-Rd Test Cycle	Magazine ID No.	Magazine ID Seq.	Rd	Tot Rd	Malfunctions, by Type FFD	FTC	FFR	FEX	FEJ	FBR	OTH	Charge to Weapon	Remarks
			5	635	PS							1	
			6	636	PS							1	
			7	637	PS							1	
			8	638	PS							1	
			9	639	PS							1	
	4	3	1	661	PS								
			2	662	PS							1	
			3	663	PS							1	
	1	4	1	691	PS								
	-	-	-	720									
7	3	1	1	721		X							
			2	722	PS							1	
			3	723	PS							1	
			4	724	PS							1	
			5	725	PS							1	
			7	727							UCF	1	Note 3
	4	2	1	751	PS								
			2	752	PS							1	
			3	753	PS							1	
			4	754	PS							1	
			5	755	PS							1	
			6	756	PS							1	
	1	3	1	781	PS								
			2	782	PS							1	
			3	783	PS							1	
			4	784	PS							1	
	-	-	-	840									
8	4	1	1	841	PS								
			2	842	PS							1	
			3	843	PS							1	
			4	844	PS							1	
	1	2	1	871	PS								
			10	880							UCF	1	Note 3
	2	3	1	901		X							
	3	4	1	931	PS								
	-	-	-	960									
9	1	1	1	961		X							
			2	962	PS							1	
			3	963	PS							1	
			4	964	PS							1	
			5	965	PS							1	
			6	966	PS							1	
	2	2	1	991	PS								

TABLE 7.25 (CONT'D)

120-Rd Test Cycle	Magazine ID No.	Seq.	Rd	Tot Rd	Malfunctions, by Type FFD	FTC	FFR	FEX	FEJ	FBR	OTH	Charge to Weapon	Remarks
	3	3	1	1021	PS								
	4	4	1	1051	PS								
			2	1052	PS							1	
			3	1053	PS							1	
			4	1054	PS							1	
			5	1055	PS							1	
			6	1056	PS							1	
			7	1057	PS							1	
			8	1058	PS							1	
			9	1059	PS							1	
			10	1060	PS							1	
			11	1061	PS							1	
			12	1062	PS							1	
			13	1063	PS							1	
			14	1064	PS							1	
			15	1065	PS							1	
			16	1066	PS							1	
			17	1067	PS							1	
			18	1068	PS							1	
			19	1069	PS				X			2-1	
			21	1071	PS							1	
			22	1072	PS							1	
			23	1073	PS							1	
			24	1074	PS							1	
			25	1075	PS							1	
			26	1076	PS							1	
			27	1077	PS							1	
			28	1078	PS							1	
			29	1079	PS							1	
			30	1080	PS							1	
10	2	1	1	1081	PS								
			2	1082	PS							1	
			3	1083	PS							1	
			4	1084	PS							1	
			5	1085	PS							1	
			10	1090							UCF	1	Note 3
	4	3	1	1141	PS								
	1	4	1	1171	PS								
Total	-	-	-	1200	209	4	0	0	1	0	3	184	

See notes at end of Table 7.27.

TABLE 7.26. FUNCTIONING PERFORMANCE DATA FOR UNLUBRICATED TEST OF XM4 CARBINE SN 6153613 (7)

120-Rd Test	Magazine ID		Tot	Malfunctions, by Type							Charge to	
Cycle	No.	Seq.	Rd	Rd	FFD	FTC	FFR	FEX	FEJ	FBR	OTH	Weapon	Remarks
1	2	2	1	32					X			1	
			4	34	PS							1	
	-	-	-	120									
2	1	1	3	123	PS							1	
			4	124	PS							1	
	2	2	1	151	PS								
			3	153					X			1	
			4	154	PS							1	
			5	155	PS							1	
			6	156	PS							1	
			10	160	PS							1	
	-	-	-	240									
3	1	1	2	242	PS							1	
			3	243	PS							1	
			4	244	PS							1	
			5	245	PS							1	
	2	2	1	271	PS				X				
			2	272					X			1	
			3	273					X			1	
			4	274					X			1	
			5	275					X			1	
			6	276					X			1	
			7	277					X			1	
			8	278	PS							1	
			9	279	PS							1	
			11	281	PS							1	
			13	283	PS							1	
	3	3	1	301	PS								
	-	-	-	360									
4	1	1	1	361	PS								Note 1
			2	362	PS							1	
			3	363	PS							1	
			4	364	PS							1	
			5	365	PS							1	
			6	366	PS							1	
	2	2	1	391	PS								
			7	397							UCF	1	Note 3
			14	404							UCF	1	Note 3
	3	3	1	421		X							
	-	-	-	480									
5	1	1	2	482	PS							1	
			3	483	PS							1	
			13	493							UCF	1	Note 3
			20	500							UCF	1	Note 3
	2	2	1	501	PS								
	-	-	-	600									Note 2

TABLE 7.26 (CONT'D)

120-Rd Test Cycle	Magazine ID No.	Seq.	Rd	Tot Rd	Malfunctions, by Type FFD	FTC	FFR	FEX	FEJ	FBR	OTH	Charge to Weapon	Remarks
6	2	1	1	601		X							Note 3
			2	602	PS							1	
			3	603		X						1	
			4	604	PS							1	
			5	605	PS							1	
			6	606	PS							1	
			7	607	PS							1	
			8	608	PS							1	
			9	609	PS							1	
			10	610	PS							1	
			11	611	PS							1	
	3	2	1	631	PS								
			2	632	PS							1	
			3	633	PS							1	
			4	634	PS							1	
			5	635	PS							1	
			6	636	PS							1	
			7	637	PS							1	
	4	3	1	661	PS								
	1	4	1	691	PS								
			2	692	PS							1	
			3	693	PS							1	
			4	694	PS							1	
			5	695	PS							1	
			6	696	PS							1	
			7	697	PS							1	
			8	698	PS							1	
			9	699	PS							1	
			10	700	PS							1	
			11	701	PS							1	
			12	702	PS							1	
			13	703	PS							1	
			14	704	PS							1	
			15	705	PS							1	
			16	706	PS							1	
			17	707	PS							1	
			18	708	PS							1	
			19	709	PS							1	
			20	710	PS							1	
			21	711	PS							1	
			22	712	PS							1	
			23	713	PS							1	
			24	714	PS							1	
			25	715	PS							1	
			26	716	PS							1	
			27	717	PS							1	
			28	718	PS							1	
			29	719	PS							1	

TABLE 7.26 (CONT'D)

120-Rd Test Cycle	Magazine ID No.	Magazine ID Seq.	Rd	Tot Rd	Malfunctions, by Type FFD	FTC	FFR	FEX	FEJ	FBR	OTH	Charge to Weapon	Remarks
			30	720	PS							1	
7	3	1	1	721	PS								
			2	722	PS							1	
			3	723	PS							1	
			4	724	PS							1	
			28	748							UCF	1	Note 3
	4	2	1	751	PS								
			10	760							UCF	1	
	1	3	1	781	PS								
	-	-	-	840									
8	4	1	1	841	PS								
			2	842	PS							1	
			19	859							UCF	1	Note 3
	1	2	1	871	PS								
			10	880							UCF	1	Note 3
	2	3	1	901					X			1	
			3	903	PS							1	
			6	906	PS							1	
	3	4	1	931	PS								
	-	-	-	960									
9	1	1	1	961	PS								
			2	962	PS							1	
			3	963	PS							1	
			4	964	PS							1	
	2	2	1	991	PS								
			2	992	PS				X			2-1	
			4	994	PS							1	
			5	995	PS							1	
			6	996	PS							1	
			7	997	PS							1	
	3	3	1	921		X			X			2-2	
			3	923	PS							1	
			4	924	PS							1	
	-	-	-	1080					X			1	
			4	1084	PS							1	
			5	1085	PS							1	
			6	1086	PS							1	
	3	2	1	1111	PS								
			2	1112					X			1	
Total	-	-	-	1200	104	4	0	0	14	0	8	107	

TABLE 7.27. FUNCTIONING PERFORMANCE DATA FOR UNLUBRICATED TEST OF XM4 CARBINE SN 6153615 (6)

120-Rd Test Cycle	Magazine ID No.	Seq.	Rd	Tot Rd	Malfunctions, by Type FFD	FTC	FFR	FEX	FEJ	FBR	OTH	Charge to Weapon	Remarks
1	-	-	-	120									
2	-	-	-	240									
3	1	1	3	243	PS							1	
	2	2	1	271	PS								
	4	4	1	331	PS								
	-	-	-	360									
4	1	1	1	361	PS								
			2	362	PS							1	
			3	363	PS							1	
	3	3	1	421		X							
	-	-	-	480									
5	1	1	3	483	PS							1	
	2	2	1	511	PS								
	3	3	1	541	PS								
	-	-	-	600									
6	2	1	1	601	PS								
			2	602	PS							1	
			3	603	PS							1	
			4	604	PS							1	
			5	605	PS							1	
			6	606	PS							1	
	3	2	1	631	PS								
	1	4	1	691	PS								
			2	692	PS							1	
			3	693	PS							1	
			4	694	PS							1	
			5	695	PS							1	
			6	696	PS							1	
			7	697	PS							1	
	-	-	-	720									
7	3	1	1	721	PS								
			2	722	PS							1	
			3	723	PS							1	
	-	-	-	840									
8	4	1	1			X							
			2		PS							1	
			3		PS							1	
			13								UCF	1	
	-	-	-	960									
9	1	1	1		PS								
			2		PS							1	
	2	2	1		PS								
	3	3	1		PS								
	4	4	1		PS								
	-	-	-	1080									
10	2	1	1		PS								
	1	2	1		PS								
Total	-	-	-	1200	35	2	0	0	0	0	1	21	

TABLE 7.27 (CONT'D)

Note 1: M855 ball cartridge lot WCC85L030-039 used throughout all testing.
Note 2: First five cycles fired without magazine rotation in the order 1, 2, 3, 4. Last five cycles fired using a one magazine progressive rotation (e.g., 2, 3, 4, 1; 3, 4, 1, 2, etc.)
Note 3: Fired a four-round burst with a single trigger pull. The round number indicated is the last (4th) round in the burst.

Remarks: All FFD and FTC stoppages were cleared by using the forward assist device.

TABLE 7.28. ENVIRONMENTAL/ADVERSE CONDITIONS TEST PROCEDURES

a. High temperature.

(1) The high temperature test was fired using three XM4 carbines and 10,800 rounds of M855 ball ammunition. The firing schedule was that used for endurance testing (encl 6). The carbines were lubricated with CLP prior to being introduced into the temperature chamber with the ammunition. Temperature was then elevated to +68 °C and held a minimum of 6 hours before firing. Firing cycles were fired at 1-hour (minimum) intervals. Scheduled weapon maintenance at 1200-round intervals was done at temperature inside the environmental chamber.

(2) Gas system airflow was measured after completion of all firing.

b. Low temperature.

(1) After completion of the high temperature test, the carbines were disassembled, cleaned, and magnaflux/zyglo inspected.

(2) After inspection, the carbines were reassembled and lubricated with LAW (MIL-L-14107) and placed in the environmental chamber with 10,800 rounds of M855 ball ammunition. The temperature was then lowered to -54 °C and held for 8 hours minimum prior to firings. Firing was done at 2-hour (minimum) intervals. Scheduled weapon maintenance after 1200 rounds per carbine was conducted outside the environmental chamber. Unscheduled maintenance was conducted at temperature during the 1200-round phases where practical.

(3) The procedures in (4) to (6), below were designed to determine the effect that various storage conditions have upon "cold-start" firing of the XM4 carbine.

(4) The first 1200 rounds per carbine was fired with the between-cycle storage of bolt closed, chamber loaded, hammer crocked, selector on safe, dust cover closed, loaded magazine inserted and latched. Each firing cycle was initiated by placing the selector on 3-round burst and then attempt to fire. Reloading of the weapon was done immediately after firing each 120 rounds.

(5) The second 1200 rounds per carbine was fired with the between-cycle storage of bolt to the rear on the bolt-stop position, selector on safe, loaded magazine inserted and latched, dust cover closed. Testing was initiated by depressing the bolt latch to chamber the first round, then fire.

(6) The third 1200 rounds per carbine was fired with the between-cycle storage condition being bolt closed, chamber empty, hammer down, selector on semiautomatic, and dust cover closed. The loading/firing procedure for this phase was: Manually retract bolt from bolt stop position to chamber first round. Fire.

(7) There was no gymnastication of the bolt and firing mechanism prior to attempted initiation of firing in any of these test phases.

(8) Gas system airflow was measured during each scheduled maintenance.

TABLE 7.28 (CONT'D)

c. Unlubricated.

(1) Three XM4 carbines were fired 1200 rounds each of M855 ball ammunition.

(2) Four new magazines were assigned to each carbine at the start of testing.

(3) All weapons were disassembled in detail, degreased in trichloroethylene (or equivalent) and reassembled before firing.

(4) The firing schedule used was the same as the endurance test, enclosure 6. No lubrication or cleaning of each weapon was done until after firing 1200 rounds.

d. Attitudes/orientations.

(1) Functioning of three XM4 carbines was determined for a variety of attitudes and orientations of the weapon as follows:

Rd No.	Sequence	Attitude, degree	Orientation	Type Hold
120	1	0	TSU	Normal
120	2	-80	TSU	Normal
120	3	+80	TSU	Normal
120	4	+80	TSU	Loose
120	5	-80	TSU	Loose
120	6	0	TSU	Loose
		Clean Weapon		
120	7	0	RSU	Normal
120	8	0	LSU	Normal
120	9	0	USD	Normal
120	10	0	RSU	Loose
120	11	0	LSU	Loose
120	12	0	USD	Loose
		Clean Weapon		

TSU = Top side up.
RSU = Right side up.
USD = Up side down.
LSU = Left side up.

(2) All firing of the M855 ball ammunition was in 3-round bursts. Cyclic rate of fire was recorded. The carbines were hand-held in all tests. Normal hold was with the weapon butt on the shooter's shoulder. Loose hold is with the butt of the weapon held away from body contact, but maintaining control of the firing direction.

TABLE 7.28 (CONT'D)

e. Sand/Dust.

(1) Three XM4 carbines were fired in this two-phase test, using M855 ball ammunition. Phase I conditioned the fully loaded carbines (selector set on safe, dust cover closed) in a dust chamber for 2 minutes before removal and firing. Refer to the procedures given in TECOM TOP 3-2-045, paragraph 6.2.13.

(2) After completion of Phase I, the carbines were cleaned and relubricated in preparation for Phase II. The weapons were fully loaded as in Phase I, but fired from the dust chamber as the dust was circulated around the carbine. The procedures of TOP 3-2-045, paragraph 6.2.12 applied.

f. Mud. Three XM4 carbines were fired in this test using M855 ball ammunition. The procedures of TOP 3-2-045, paragraph 6.2.15 applied.

g. Simulated rain. Three XM4 carbines were fired in this test, using M855 ball ammunition. The procedures of TOP 3-2-405, paragraph 6.2.11 applied, except that 120 rounds were fired each time (four 30-round magazines).

h. Saltwater immersion. Three XM4 carbines were fired in this test, using M855 ball ammunition. The procedures of TOP 3-2-405, paragraph 6.2.14 applied, except that each firing consisted of 120 rounds per weapon (four 30-round magazines). The firing schedule is shown in Enclosure 3, Table 3.1.

i. Icing. Three XM4 carbines were fired in this test. The procedures of TOP 3-2-045, paragraph 6.2.9.3 applied except that 120 rounds of M855 ball ammunition per carbine were conditioned and fired.

j. Chemical compatibility. This test was accomplished by immersion of the chemicals on the nonmetallic components/assemblies of the carbines. The chemicals used were those associated with NBC decontamination (i.e., DS-2 and STB). The two weapons used were not fired. 120 rounds each after decontamination was completed. The guidance given in TOP 3-2-609 was used in the conduct of testing.

k. Analysis.

(1) High temperature. Reference criterion Ie,

(2) Low temperature. Reference criterion Ie,

(3) Unlubricated. No criterion, fired for information.

(4) Attitudes/orientations. Reference criterion Ia,

(5) Sand/dust. No criterion, fired for information.

(6) Mud. No criterion, fired for information.

(7) Simulated rain. No criterion, fired for information.

(8) Saltwater immersion. No criterion, fired for information.

(9) Icing. No criterion, fired for information.

(10) Chemical compatibility. Reference criterion Ik,

TABLE 7.28 (CONT'D)

The subtests for which there were no criteria specified in the ROC were analyzed for trends in performance which differed from the Endurance test results. Any safety related problems were judged separately, based on MIL-STD-882A requirements: These were addressed in the Safety and Health subtest, enclosure 9.

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RELIABILITY

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TABLE 8.1. RELIABILITY - NONFIRING ANALYSIS OF DATA PROCEDURES

a. Reliability calculations were made on the data from each firing subtest. These included mean rounds between stoppages (MRBS) and mean rounds before operational mission failure (MRBOMF).

b. Whenever the MRBS fell below 600 or the MRBOMF fell below 3800, a reliability failure occurred. This applied only to ambient temperature tests.

c. All adverse/extreme temperature environment reliability was compared to the results in 8b to determine if there was a significant difference in reliability due to any test environment.

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SAFETY AND HEALTH TESTS

TABLE OF CONTENTS

SAFETY AND HEALTH

TABLE 9.1. FUNCTIONING PERFORMANCE DATA FOR FLASH TEST OF XM4 CARBINE SN 6153603 (1)

Test Phase	Test Cycle	Magazine ID No.	Seq.	Rd	Tot Rd	Malfunctions, by Type FFD	FTC	FFR	FEX	FEJ	FBR	OTH	Chg to	Remarks
					6									Fouling shots
I	1				9									M855 ball with
	2				18									suppressor
	3				48									
II	1				51									M855 ball with-
	2				60									out suppression
	3				90									
III	1				96									M856 tracer
	2				102									with suppression
	3				132									
IV	1				138									M856 tracer
	2				144									without sup-
	3				174									pression
Total					174	0	0	0	0	0	0	0	0	

TABLE 9.2. FUNCTIONING PERFORMANCE DATA FOR FLASH TEST OF XM4 CARBINE SN 6153608 (9)

Test Phase	Test Cycle	Magazine ID No.	Seq.	Rd	Tot Rd	Malfunctions, by Type FFD	FTC	FFR	FEX	FEJ	FBR	OTH	Chg to	Remarks
					6									Fouling shots
I	1				9									M855 ball with
	2				18									suppressor
	3				48									
II	1				51									M855 ball with-
	2				60									out suppression
	3				90									
III	1				96									M856 tracer
	2				102									with suppression
	3				132									
IV	1				138									M856 tracer
	2				144									without sup-
	3				174									pression
Total					174	0	0	0	0	0	0	0	0	

TABLE 9.3. FUNCTIONING PERFORMANCE DATA FOR SMOKE TEST OF XM4 CARBINE SN 6153603 (1)

Test Phase	Test Cycle	Magazine ID No.	Seq.	Rd	Tot Rd	Malfunctions, by Type FFD	FTC	FFR	FEX	FEJ	FBR	OTH	Chg to	Remarks
I	1	-	-	-	30									M855 ball
	2	-	-	-	60									
II	1	-	-	-	90									M856 tracer
	2	-	-	-	120									
Total					120	0	0	0	0	0	0	0	0	

TABLE 9.4. FUNCTIONING PERFORMANCE DATA FOR SMOKE TEST OF XM4 CARBINE SN 6153608 (9)

Test Phase	Test Cycle	Magazine ID No.	Seq.	Rd	Tot Rd	Malfunctions, by Type FFD	FTC	FFR	FEX	FEJ	FBR	OTH	Chg to	Remarks
I	1	-	-	-	30									M855 ball
	2	-	-	-	60									
II	1	-	-	-	90									M856 tracer
	2	-	-	-	120									
Total					120	0	0	0	0	0	0	0	0	

TABLE 9.5. FUNCTIONING PERFORMANCE DATA FOR NOISE TEST OF XM4 CARBINE SN 6153608 (9)

Test Phase	Test Cycle	Magazine ID No.	Seq.	Rd	Tot Rd	Malfunctions, by Type FFD	FTC	FFR	FEX	FEJ	FBR	OTH	Chg to	Remarks
I	1	-	-	-	5									M855 ball
II	1	-	-	-	10									M855 ball
Total					15	0	0	0	0	0	0	0	0	

TABLE 9.6. FUNCTIONING PERFORMANCE DATA FOR COOKOFF TEST OF XM4 CARBINE SN 6153605 (10)

Test Phase	Test Cycle	Magazine ID No.	Seq.	Rd	Tot Rd	Malfunctions, by Type FFD	FTC	FFR	FEX	FEJ	FBR	OTH	Chg to	Remarks
I	1	-	-	-	230									M855 ball
	2	-	-	-	450									Barrel 10
	3	-	-	-	660									
	4				855	BOB							1	
	5	-	-	-	1058									
	6				1200	BOB							1	
	7	-	-	-	1400									

TABLE 9.6 (CONT'D)

Test Phase	Test Cycle	Magazine ID No.	Seq.	Rd	Tot Rd	Malfunctions, by Type FFD	FTC	FFR	FEX	FEJ	FBR	OTH	Chg to	Remarks
	8	-	-	-	1600									
	9	-	-	-	1800									
	10	-	-	-	2000									
	11	-	-	-	2190									
	12				2219			LI					1	
	13					BOB							1	
						BOB							1	
					2407	BOB							1	
	14	-	-	-	2597									
	15				2787									
	16				2977									
	17				3167									
II	1				3377									M193 ball
	2				3577									Barrel S-1
	3				3767									
	4				3947									
	5				4117									
	6	-	-	-	4287									
	7	-	-	-	4457									
	8	-	-	-	4627									
	9	-	-	-	4797									
III	1	-	-	-	4977									M196 tracer
	2	-	-	-	5177									Barrel S-2
	3	-	-	-	5397									
	4	-	-	-	5607									
	5	-	-	-	5807									
	6	-	-	-	5997									
	7	-	-	-	6177									
	8	-	-	-	6357									
	9	-	-	-	6537									
	10	-	-	-	6717									
IV	1	-	-	-	6927									M856 tracer
	2	-	-	-	7127									Barrel S-3
	3	-	-	-	7317									
	4	-	-	-	7507									
	5	-	-	-	7697									
	6	-	-	-	7887									
	7	-	-	-	8077									

TABLE 9.6 (CONT'D)

Test Phase	Test Cycle	Magazine ID No.	Seq.	Rd	Tot Rd	Malfunctions, by Type FFD	FTC	FFR	FEX	FEJ	FBR	OTH	Chg to	Remarks
V	1				8194			LI					1	M200 blank Barrel S-4
	2	-	-	-	8434									
	3	-	-	-	8644									
	4	-	-	-	8834									
	5	-	-	-	9014									
	6				9022					X			1	
	7	-	-	-	9192									
	8	-	-	-	9352									
	9	-	-	-	9512									
	10	-	-	-	9672									
	11	-	-	-	9832									
	12	-	-	-	9992									
Total					9992	5	0	2	0	1	0	0	8	

9.7 SAFETY AND HEALTH EVALUATION TEST PROCEDURES

a. Flash/smoke.

(1) Flash.

(a) Breech and muzzle flash were measured in a darkened enclosed range using a still camera and black and white film. Location of the camera relative to the weapon was such that a full field of view of the weapon breech and the distance beyond the muzzle allowed capture of all visible flash on the film.

(b) The firing schedule was as follows:

I. Flash suppressor installed:

Weapon No. 1 with M855 ball ammunition.

Three fouling shots fired before start of test.

Three single rounds fired - photograph each.

Three 3-round bursts fired - photograph each burst.

Ten 3-round bursts fired - photograph cumulative burst.

Clean barrel bore.

II. Repeat I with flash suppressor removed.

III. Repeat I with M856 tracer ammunition.

IV. Repeat II with M856 tracer ammunition.

V. Repeat I with weapon No. 9.

VI. Repeat II with weapon No. 9.

VII. Repeat III with weapon No. 9.

VIII. Repeat IV with weapon No. 9.

Note: For each test group (e.g., II, IV) there were seven photographs taken and 45 rounds fired.

A grid scale in each photograph was used to quantify the size of the flash. Brightness of the flash and its color were subjectively recorded by visually observing the firing.

9.7 (Cont'd)

(2) Smoke.

(a) Smoke testing was divided into two phases. Phase I recorded the obscuration of a target as viewed by the shooter. The cumulative effects of firing ten 3-round bursts from a prone position were recorded in a series of photographs taken during firing. The intervals (in bursts fired were 0, 1, 4, 7, 10).

A checkerboard target, 2.4m^2, with 0.3-meter black and white squares covering its entire surface was used. This target was placed in line with the gun at a range of 100 meters. The gun was elevated to fire slightly over the target. The camera was placed behind and as near as practible to the weapon line of sight. Firing, on a windless day, was at the rate of 85 spm in 3-round bursts. The direction of sunlight on the target and weapon was similar to allow comparison data.

(b) Phase II of the smoke test was the detection phase, recorded from down range toward the weapon as it was fired. The firing schedule used for Phase I was repeated with the checkerboard target being placed behind the firing position. Camera location was 30 meters forward of the muzzle and 4 meters to the right of the line-of-fire.

b. Noise.

(1) This test was fired with two XM4 carbines: one new and one used, after completion of the endurance test. The firing schedule was as follows:

Test No.	Position/location	Mode of Fire	No. Rd
a1	Prone, shooter's ear weapon fired from shoulder.	Single-shot	5
2	Standing, shooter's ear, weapon fired from underarm.	Single-shot	5
3	Prone, 5 meters right of muzzle.	Single-shot	5
4	Prone, 5 meters behind muzzle.	Single-shot	5
5	Prone, distance that 140 db occurs.	Single-shot	5

[a]Right hand shooter's left ear.

c. Cookoff.

(1) One XM4 carbine and four spare barrel assemblies were used in this test: one barrel for each cartridge type.

(2) The ammunition evaluated was M855, M856, M193, and M200.

(3) The average firing rate was 85 spm fired in 3-round bursts from 30-round magazines for all tests.

9.7 (Cont'd)

(4) Special cookoff rounds were used which had primers modified to prevent firing.

(5) Temperature measurements were taken on the barrel exterior at 6 and 12 o'clock positions opposite the origin of rifling. two other thermocouples was attached to the hand guard at fore and aft positions on the bottom handguard.

(6) The first test cycle consisted of firing 230 rounds of ammunition in order to get a cookoff.

(7) Subsequent tests were reduced in 10-round intervals until five consecutive trials without cookoff were completed. Whenever it was obvious from the initial results obtained, that a greater reduction in rounds fired was required to produce no-cookoff, then the adjustment was made in multiples of 10 rounds.

(8) After completion of the M853 ball cartridge, the barrel/upper receiver assembly was replaced with one of the new instrumented assemblies and one of the remaining four ammunition types was fired.

(9) Repeat testing with the other types of ammunition and their new barrel/upper receiver assemblies.

d. Analysis.

(1) Flash/smoke - no criterion, fired for information.

(2) Noise - criterion b, (fill in).

(3) Cookoff - criterion a, (fill in).

Objective assessment was made of the flash and smoke produced during firing of the XM4 carbine.

The noise criterion was assessed on a pass/fail basis, based on comparison of resultant data to that of the charts listed in MIL-STD-1474B.

The cookoff criterion was assessed on a pass/fail basis using the 150-round no cookoff point as the basis for that determination.

All safety-related incidents observed throughout this entire test were assimilated in this subtest, analyzed, and evaluated in accordance with MIL-STD-882A.

HUMAN FACTORS

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TABLE 10.1. HUMAN FACTORS - NONFIRING ANALYSIS OF DATA PROCEDURES

a. The interface between the XM4 carbine and the shooter was evaluated to determine if there were any deficiencies, shortcomings, or improvements which required changes.

b. Analysis (ref criteria If, Ig, Il). Data collected during the firing tests were objectively assessed to determine compliance with each criterion. Each was met if, for the test conducted/personnel used, there were no deficiencies or shortcomings.

(Page 4 Blank)

LOGISTIC SUPPORTABILITY

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Technical Review of TM9-1005-320-10

FROM: *(Activity and location) (Include ZIP Code)*

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ITEM NO.	PAGE NO.	PARAGRAPH	LINE NO.*	FIGURE NO.	TABLE NO.	RECOMMENDED CHANGES AND REASON *(Provide exact wording of recommended change, if possible).*
1	1					Comment: Radiation hazard information is not applicable to carbine, which uses a solid, square shaped front sight post. This is also confirmed by the absence of the tritium sight listings in the additional authorized items list pages 108 to 114.
2	26					Comment: Use of CLP at temperature down to -35° will result in increased numbers of stoppages. The use of CLP is being continually restricted because of poor performance at low temperature.
3	68 to 71					Comment: Although starting out with a three-round burst is nice, in actual use, selection and immediate use of burst fire will result in 1,2, or 3 rounds being fired on the first burst. The last burst will be the reciprocal number of rounds from the first. While the soldier should be told how to set the burst counter, he must be told about how it works normally so that when the gun fires less than 3 rounds he will pull the trigger again before starting immediate action to identify and clear a possible stoppage (as shown in pages 72-74).
4	66,73, 85					Comment: These three pages say either "TAP forward assist", or "Release charging handle and strike forward assist to seat round and lock bolt." They should, <u>but do not</u>, define or visually show the correct/incorrect position of the bolt carrier in the receiver, which will <u>tell</u> the shooter that the bolt is <u>fully</u> locked.

**Reference to line numbers within the paragraph or subparagraph.*

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE

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5	74					Comment: Figure caption on left states "If your M4 carbine fails to fire after performing steps 1 through 5, check again for a jammed cartridge base". Since the right-hand figure shows removal of a stuck case/round, it is assumed that the left-hand caption should read "If your M14 carbine still fails to chamber after performing steps 1 through 5. Check again for an unextracted or fired case in the chamber.
6	75					Comment: In addition to the instructions given, failure to extract a fired case where the bolt is fully closed on the case and feeding/chambering of the next round has not started (short recoil) should also be rated as a sign of the bullet-in-bore condition.
7	78					Comment: CLP is not recommended as a cleaner at low temperature. Small trace amounts will remain on critical components and can cause stoppages.
8	81					Comment: Excessive removal/reloading of aluminum magazines cause permanent damage to the feed lips. Correct procedure must be described and visually shown to the operator to prevent damage from occurring (e.g., prying the top round out of the magazine must not be done).
9	82					Comment: The "NOTE" suggests that the user remove the muzzle cap. Doing this with a loaded weapon can be hazardous. At a minimum, the safety should be "ON".

**Reference to line numbers within the paragraph or subparagraph.*

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10	84,85					Comment: Sequences of clearing water from bore is incorrect. Water will not be cleared from the bore in step 2 until step 3 is done first. These two actions must be done simultaneously. Comment in item 9 above also applies to step 1.
11	86					Comment: Other causes for misfiring are broken hammer spring, bolt not locked and bolt carrier fully forward.
12	88					Comment: a. Other causes of failure to feed: Loading two consecutive rounds on same side of magazine. This is created during loading with "tight" stripper clipped ammunition. When fully loaded the top round of a 30-round magazine should always be on the right side. b. Magazine not latched. This is usually due to loading a full magazine in the carbine when the bolt is forward. It is not recommended to load in this manner since first round case deformation can occur which will prevent chambering of that round. c. See also page 67. Recommend not loading full magazines in the weapon with bolt closed. d. Magazine catch can be defective (loose axis shaft) which will cause loss of magazine during firing.
13	89					Comment: Another cause of Double feed is given in item 12, comment a.

*Reference to line numbers within the paragraph or subparagraph.

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14	90					Comments: A damaged carrier key and/or gas tube (where the two do not properly meet) will prevent chambering. A loose barrel will also create the above condition. A ruptured cartridge case will prevent chambering.
15	91					Comments: Extraction failures are primarily caused by two basic problems (1) a dirty or corroded/damaged chamber (results in leaving a rim sheared case in in the chamber), and (2) defective extractor assembly (e.g. broken parts, weak/missing spring and/or spring buffer) which may cause partial extraction of the case and subsequent feeding failure.
16	92					Comments: Short recoil usually is a result of broken gas rings, not alignment of ring gaps. See also text comments on page 75 for bullet-in-bore and review comment item No. 6 for page 75.
17	97					Comment: The sliding buttstock can and should be removed during cleaning. All its components are captive so loss will not occur. Make necessary changes to page 15 (add procedures for removing/installing sliding buttstock.
18	99					Comment: Should add unloading of magazine procedures and manual (without stripper clip) reloading since the manual directs these operations (page 81). See item 8 comments also.

**Reference to line numbers within the paragraph or subparagraph.*

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Technical Review of TM9-1005-320-24&P
Technical Manual, Organizational, Direct Support, and General Support Maintenance Manual (Including Repair Parts aned Special Tools List) (Preliminary Draft Undated)

FROM: *(Activity and location) (Include ZIP Code)*

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1				C-11		Item No. (6) not shown on figure but is listed in accompanying table.
2				C-12		Item 3 part number changed 9390031.
3				C-16		Item 16 listed as torque wrench should probably be labeled torque wrench adapter/pin spanner wrench.
4	Index 3	R last entry				Change M16A2 rifle to M4 carbine.
5	Index 3	M				Major components - change M16A2 rifle to M4 carbine.
6	Index 2	F last entry				Same change as 4.
7	Index 4	R first entry				Same change as 4.
8	Index 4	S last entry				Same change as 4.
9	Index 4	T 3 entries				Same change as 4.
10	NOTE- Lubrication					Per letter, HQ, USAARMCCOM (AMSMC-MAG-SDA) 17 April 1986, Subject Reinstated Use of Lubricating Oil (LSA), MIL-L-46000, Lubricating Oil (LAW) MIL-L-14107, and Cleaning Compound, Rifle Bore (RBC) MIL-C-372, on all Small Arms, the Overlap of LSA, CLP and LAW is as follows:
11	(2 pages) WARNING	-				Radiation Hazard- There is no requirement for the use of tritium sight on the carbine.

Lube Type	Range °F
LSA	-10 or above
CLP	-10 or above
LAW	+10 or below

*Reference to line numbers within the paragraph or subparagraph.

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12	1-1					Cam clutch spring- official nomenclature of helical spring is not precise. The spring operates as a torsion spring but is wound as a helical spring (see description of the hammer spring).
13	1-3					Max rate of fire Semiautomatic = 45 Burst (3-rd controlled) = 90 (This info per USMC Required Operational Characteristics (ROC)).
14	2-6a					Item 6 - Procedures Column. ...binds in the carrier key, check for a loose barrel or carrier key. If neither is loose/misaligned, check for a bent gas tube. Try to correct.
15	2-13	8				Step 4, - See remarks in Item 14 above.
16a	2-33	2-17				...to separate the buttstock assembly latch from the lower receiver extension. With the latch retracted, pull the sliding stock rearward and off the lower receiver extension.
16b	2-7	7				See note about removal of buttstock, then refer to 16a above.
16c	2-40	2-17d				Add: Assure that sliding buttstock is pushed forward sufficiently to reengage the latch in the groove of the lower receiver extention.
17	2-41	2.18				NOTE: Inspect for cracks in the stock latch base and surrounding plastic material of the stock. Cracks in this area require replacement of the entire assembly.
18	3-1	3-4a				Second sentence is incomplete.

*Reference to line numbers within the paragraph or subparagraph.

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19a	3-7	10 Step 6				It is not clear if the remarks refer to the gas tube hole in the front sight base or in the barrel proper. There is no removal of sight base shown. This would be necessary to either determine presence of fouling in barrel port (or transition port in sight base which connects the barrel to the gas tube. NOTE: The most injurious buildup in either barrel, sight base, or gas tube, is metallic in nature (guilding metal), not carbon. There is no Appendix D shown in this manual. Are the items listed as being in Appendix D available for use on the M4 carbine? Where is the reference located? Does DC-111 carbon removing compound attack chrome plating in the bore?
19b	3-36	3.12 Test 2				Bore straightness gage may not pass through bores which have metallic fouling because of firing a few rounds.
	3-37					Use of a new bore brush to clear fouling may not be sufficient to allow passage of the plug gage, yet the barrel is still "serviceable".
20	3-49					See comments to item 16a above.
21	3-54					See comments to item 17 above.
22	3-56					See comments to item 19a above, relative to Appendix D.
23	3-58					See comments to item 19a above, relative to Appendix D.
24	3-61					The take down pin detent shown (#20) is incorrect. There is no tong on the detent.
25	3-62					See comments in item 16a above.

**Reference to line numbers within the paragraph or subparagraph.*

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26	3-63a					See comments in item 17 above.
27	3-65					3-18 Inspection b. replace trigger subassembly.
28	3-69					See comments to item 19a above, relative to Appendix D.
29	3-69	7				The 40±2 inch pounds is at variance with the 40±2 foot pounds specified on drawing No. 9390011 for the XM4 carbine. This difference needs to be resolved.
30	3-57					Has TM9-1005-301-30 been modified to incorporate the M4 stocks?
31	3-82					Last sentenance in "References" changes to read ....other units in regard to the interval...
32	4-7/8					Figures show front sling clamp. The swivel adaptor used in current test weapons is the unit found in use with M203 grenade launcher attachment. It is questioned as to whether the front clamp has been replaced by the side mounted swivel assembly. If so, then show the changes graphically and describe its installation.
33	4-9/10					Reference Appendix D - see comments in item 19a above.
C-6 C-7				C-1		Sling, Items #2 reference picture is wrong item NSN#1005-01-083-8113. Should be 1005-00-167-4336. See page 106 of TM9-1005-320-10.

*Reference to line numbers within the paragraph or subparagraph.

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11.3 LOGISTIC SUPPORTABILITY TEST PROCEDURES

a. The maintenance actions taken during all tests were summarized. The various levels of maintenance and the times associated with those actions were tabulated.

b. Analysis (reference - none specified). Objective assessment of the resultant data collected during all firing tests was used to establish the presence of any logistical deficiencies or shortcomings of the XM4 carbine. If there were none, or those which did exist are also present, and accepted, in the carbine is considered acceptable.

c. Review applicable technical publications for completeness and accuracy.

DEFINITIONS

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Note: Refer to individual tables/paragraphs in the enclosures and body of the report for other abbreviations which are defined when used.

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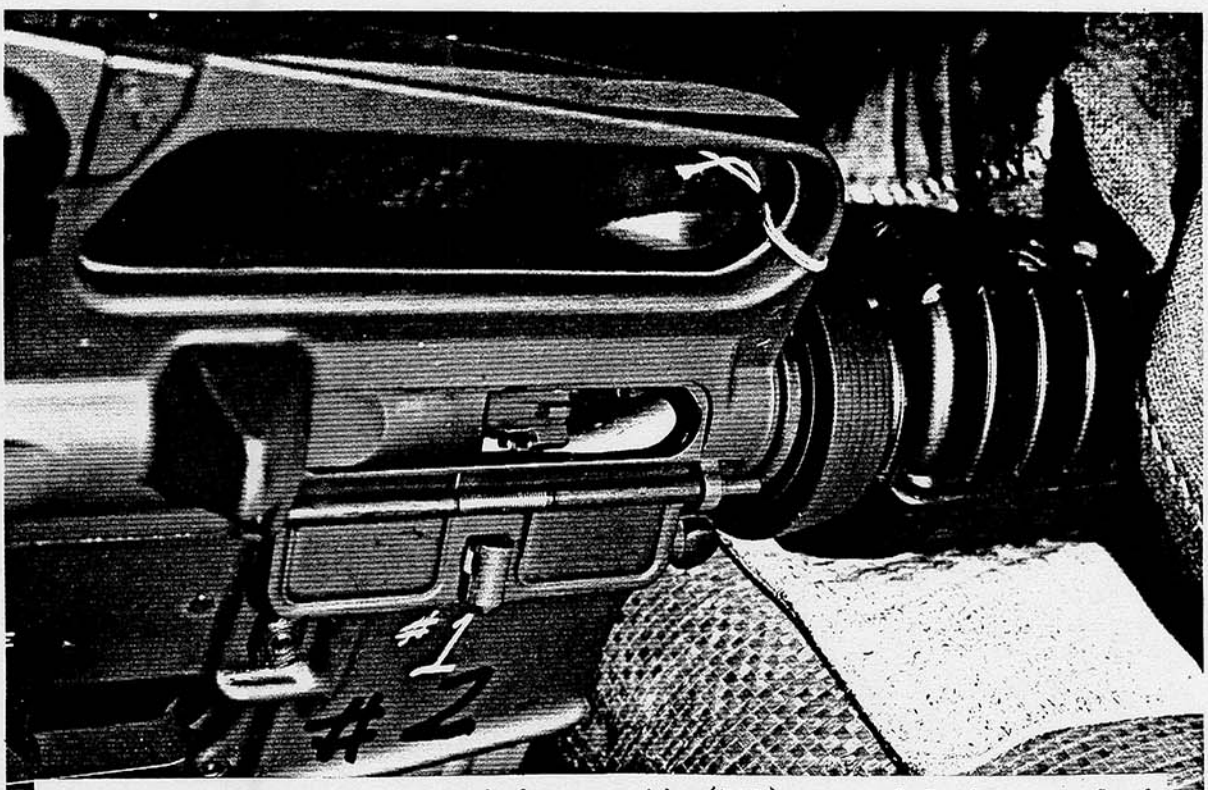

Figure 12.1. Characteristic bolt override (BOB) type of failure-to-feed (FFD) malfunction.

Figure 12.2 Charateristic double-feed (DF) type of failure-to-feed (FFD), or failure to eject (FEJ) malfunction.

(Page 4 Blank)

REFERENCES

1. Letter, TECOM, AMSTE-TE-F, 17 December 1985, subject: Test Execution Directive for Development Test II (PQT-G) of Carbine, 5.56 MM, XM4, TECOM Project No. 2-WE-600-004-001.

2. Miller, Franklin H. Test Plan Summary, Development Test II (DT-II) of Prototype Qualification Test - Government (PQT-G) of Carbine, 5.56 MM, XM4, by TECOM Project No. 2-WE-600-004-001, July 1986.

3. Safety Assessment Report (Final) (incl., Preliminary Hazard Analysis (PHA) Report) XM4 Carbine, 5.56 MM, M16A2, Contact No. DAAA 21-85-C-0192, April 1986 Prepared by Colt Industries, Firearms Division for Department of Army, USAAMCCOM, Dover, NJ.

4. TM 9-1005-320-24 + P.

5. TM 9-1005-320-10.

6. MIL-D-50030G(EA), 2 June 1986: Military Specification, Decontaminating Agent, DS2.

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