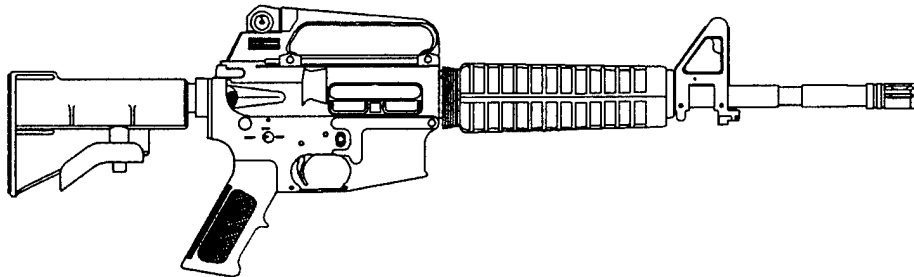


# Fire to Destruction Test of 5.56mm M4A1 Carbine and M16A2 Rifle Barrels

Final Report



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Prepared by:

**Jeff Windham**  
Small Arms Branch  
Engineering Support Directorate  
Rock Island Arsenal, Illinois

September 1996

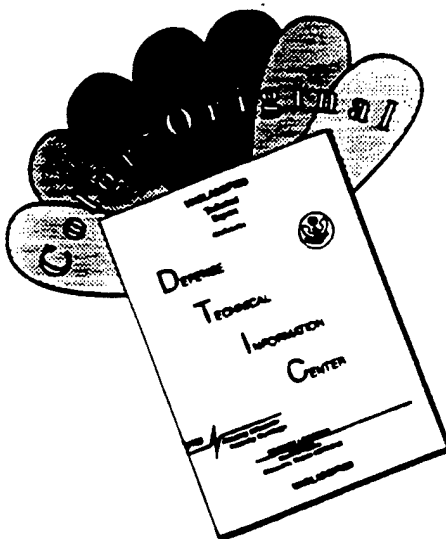
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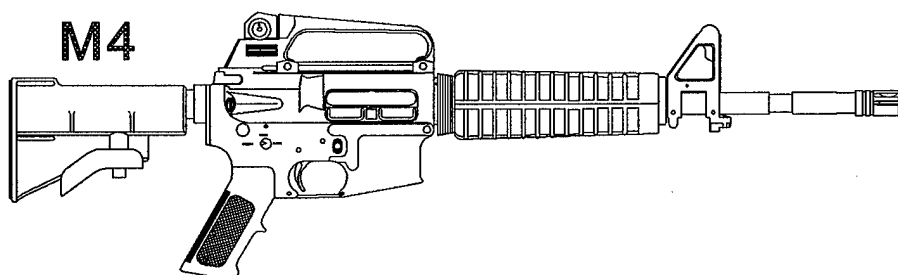
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REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER AMSTA-AR-ES-96-2	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) Fire to Destruction Test of 5.56mm M4A1 Carbine and M16A2 Rifle Barrels		5. TYPE OF REPORT & PERIOD COVERED Final Report
		6. PERFORMING ORG. REPORT NUMBER AMSTA-AR-ES-96-2
7. AUTHOR(s) Jeff Windham AMSTA-AR-ESW-S Rock Island, IL 61299-7300		8. CONTRACT OR GRANT NUMBER(s)
9. PERFORMING ORGANIZATION NAME AND ADDRESS U.S. Army Armament Research, Development and Engineering Center (ARDEC), AMSTA-AR-ESW-S Rock Island, IL 61299-7300		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
11. CONTROLLING OFFICE NAME AND ADDRESS		12. REPORT DATE Sept 1996
		13. NUMBER OF PAGES 29
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)		15. SECURITY CLASS. (of this report)
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE
16. DISTRIBUTION STATEMENT (of this Report)  Distribution Statement A: Distribution Unlimited.		
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)		
18. SUPPLEMENTARY NOTES		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number)  5.56mm                                      Small Arms                      M4A1 Carbine M4 Carbine                                      Temperature Handguard                                      M16A2 Rifle Barrel    Ruptured		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number)  This test report examines the effects of firing 5.56mm M4A1 Carbine and M16A2 Rifles at a high rate of fire until the weapon is severely overheated and destroyed due to ruptures in the barrel. This test indicated the M4A1 Carbine performs as well as or better than the M16A2 Rifle with respect to barrel ruptures from overheating.		

TECHNICAL REPORT NO. AMSTA-AR-ES-96-2

**FIRE TO DESTRUCTION TEST OF  
5.56mm M4A1 CARBINE AND M16A2 RIFLE BARRELS**

Final Report

SEPTEMBER 1996

PREPARED  
BY

  
JEFF WINDHAM

General Engineer

APPROVED  
BY



DONALD K. KOTECKI

Director, Engineering Support Directorate

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ENGINEERING SUPPORT DIRECTORATE  
ARMAMENT RESEARCH, DEVELOPMENT AND ENGINEERING CENTER  
ROCK ISLAND, IL 61299-7300

Disclaimer: The findings of this report are not to be construed as an official Department of the Army position unless so designated by other authorized documents.

ABSTRACT:

This test report examines the effects of firing 5.56mm M4A1 Carbine and M16A2 Rifles at a high rate of fire until the weapon is severely overheated and destroyed due to ruptures in the barrel.

This test indicated the M4A1 Carbine performs as well as or better than the M16A2 Rifle with respect to barrel ruptures from overheating.

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# FIRE TO DESTRUCTION TEST OF 5.56mm M4A1 CARBINE AND M16A2 RIFLE BARRELS

16 SEPTEMBER 1996

**1.0 BACKGROUND:** Reports have been received of 5.56mm M4A1 Carbine barrels rupturing. These incidents have occurred in Special Forces units which have recently been fielded M4A1 Carbines to replace their M16A2 Rifles (see Appendix A). In the past, ruptured barrels have occurred in the M16 Series Rifles when the barrel was grossly overheated due to excessive firing rates. Concern was expressed that the M4A1 Carbine may be more susceptible to the ruptured barrel problem at lower rates of fire. Testing was conducted at Rock Island Arsenal to examine this issue.

**2.0 TEST PROCEDURE:** A test fixture was constructed which would hold the weapons during firing while protecting the shooter when the barrel ruptured. Provisions were made in this test fixture for both remote firing of the weapon and remote operation of the charging handle. Video cameras were set to show the barrel and ejection port. The barrel was thermocoupled along its length (see Appendix B). Photographs of the test fixture are shown in figures 1, 2, and 3. The M16A2s were modified to fire full automatic by using M16A1 Rifle firing mechanism. The weapons were assembled into the test fixture and fired full automatic in 30 round bursts (magazine changes approximately every 10 seconds).

## **3.0 TEST RESULTS:**

**3.1 M16A2 Rifle:** The M16A2 was fired continuously using 30 rounds bursts. Shown in table I are the rounds to failure, time to failure and maximum barrel temperature of the barrel. Muzzle flash increased and there was a distinct change in the sound of the weapons firing approximately 30 rounds before the barrel ruptured. There was also noticeable drooping (about 1 inch at the muzzle) of the barrel just prior to the barrel rupture. The barrel ruptured at 491 rounds with an approximately  $\frac{1}{4}$  inch hole in the top of the barrel about 8 inches in front of the chamber. The barrel was bent approximately 5 degrees and bulged in several locations along its length (see figures 4, 5, and 6). A plot of barrel temperature versus time at each thermocouple location is shown in figure 7.

**3.2 M4A1 Carbine, Weapon 1:** The M4A1 Carbine was fired for



540 rounds. It was thought the M4A1 barrel would rupture well before this point, therefore only 540 rounds were loaded for firing. This weapons barrel was noticeably bent and bulged at the end of the test (see figure 8). A plot of barrel temperature versus time at each thermocouple location is shown in figure 9.

**3.3 M4A1 Carbine, Weapon 2:** A second M4A1 Carbine was fixtured for testing and fired until barrel rupture. Muzzle flash increased and there was a distinct change in the sound of the weapons firing approximately 30 rounds before the barrel ruptured. There was also noticeable drooping (about  $\frac{3}{4}$  inch at the muzzle) of the barrel just prior to the barrel rupture. The barrel was ruptured at the 12 o'clock position approximately 4 inches in front of the chamber. The rupture was approximately  $1\frac{1}{4}$  inches long and  $\frac{5}{8}$  inches wide. The barrel around the rupture was bulged out about 30 percent larger than its normal diameter. The barrel was bent at the hole approximately 3 degrees (see figures 10 and 11). A plot of barrel temperature versus time at each thermocouple location is shown in figure 12. There was an approximately 30-second delay in firing of this sequence which can be seen in the temperature plots. This delay allowed additional cooling of the weapon and may have increased the number of rounds to rupture by 30 to 60 rounds.

## FIRE TO DESTRUCTION TEST RESULTS

	M16A2 Rifle	M4 Carbine (Weapon 1)	M4 Carbine: (Weapon 2)
<b>Number of Rounds to Destruction:</b>	491	540*	596
<b>Time to Destruction: (min:sec)</b>	2:49	3:00*	3:32
<b>Max Barrel Temperature at Destruction:</b>	1599°F	1712°F*	1639°F

\* Gunner ran out of ammunition before weapon's barrel was destroyed.

TABLE I

**4.0 Metallurgical Evaluation:** The metallurgist report of the ruptured M4A1 Carbine barrel is in Appendix C. The hardness plot of this report shows a change in hardness of the barrel three to

five inches forward of the chamber. This analysis is consistent with the temperature plots in figure 13 which show this area of the barrel reaches the highest temperature during firing. The evaluation shows the chemical content and metallurgical structure of the barrel were acceptable before the rupture.

## **5.0 ANALYSIS:**

5.1 Reviewing the results of Table I, the M16A2 Rifle failed at 491 rounds versus between 540 to 596 for the M4A1 Carbine. This indicates the M4A1 performs better with respect to barrel rupture than the M16A2 (firing full automatic).

5.2 From the rupture, it may appear the bullet exits the side of the barrel, however this test showed no indication of the bullet exiting the side of the barrel on the plywood screens around the barrel. Most likely the bullet exited the end of the barrel and the rupture in the side of the barrel was solely due to the high pressure gases within the barrel.

5.3 The barrels were noticeably bent and bulged upon rupture. This likely occurs just prior to the failure and accounts for the flash increase and sound change just prior to failure as gas blows by the bullet.

## **6.0 CONCLUSIONS:**

6.1 The M4A1 Carbine performs well with respect to the number of rounds and firing schedules required to produce a barrel rupture. The M4A1 Carbine is as good as or better than the M16A2 Rifle (firing full automatic) with respect to number of rounds required to rupture the barrel. It is possible that the 3-round burst mechanism standard in the M16A2 would reduce the probability of a ruptured barrel.


6.2 The ruptured barrels received from the field were visually and metallurgically identical to the ruptured M4A1 Carbine barrel fired during this test. Therefore, it is concluded that the failure mode of the field weapons and the M4A1 Carbine destroyed in this test is the same, i.e., overheating of the barrel due to severe firing schedules.

## **7.0 OTHER RELATED REPORTS:**

- a. External Barrel Temperature of the M16A1 Rifle, R-TR-75-045, July 1975, Rodman Laboratory, Rock Island Arsenal, IL.
- b. XM4 Carbine Development Program, AD-E401 627, Sept 1987, Colt Firearms, Hartford, CT.
- c. External Barrel and Handguard Temperature of the 5.56mm M4 Carbine, SMCAR-ES-94-1, Sept. 1994, Rock Island, IL.
- d. ARDEC Evaluation of Blown 5.56mm M4A1 Carbine Barrel,

28 March 1995.

e. ARDEC Evaluation of Blown 5.56mm M4A1 Carbine Barrel,  
31 August 1996.

  
Jeff Windham  
General Engineer  
AMSTA-AR-ESW-S

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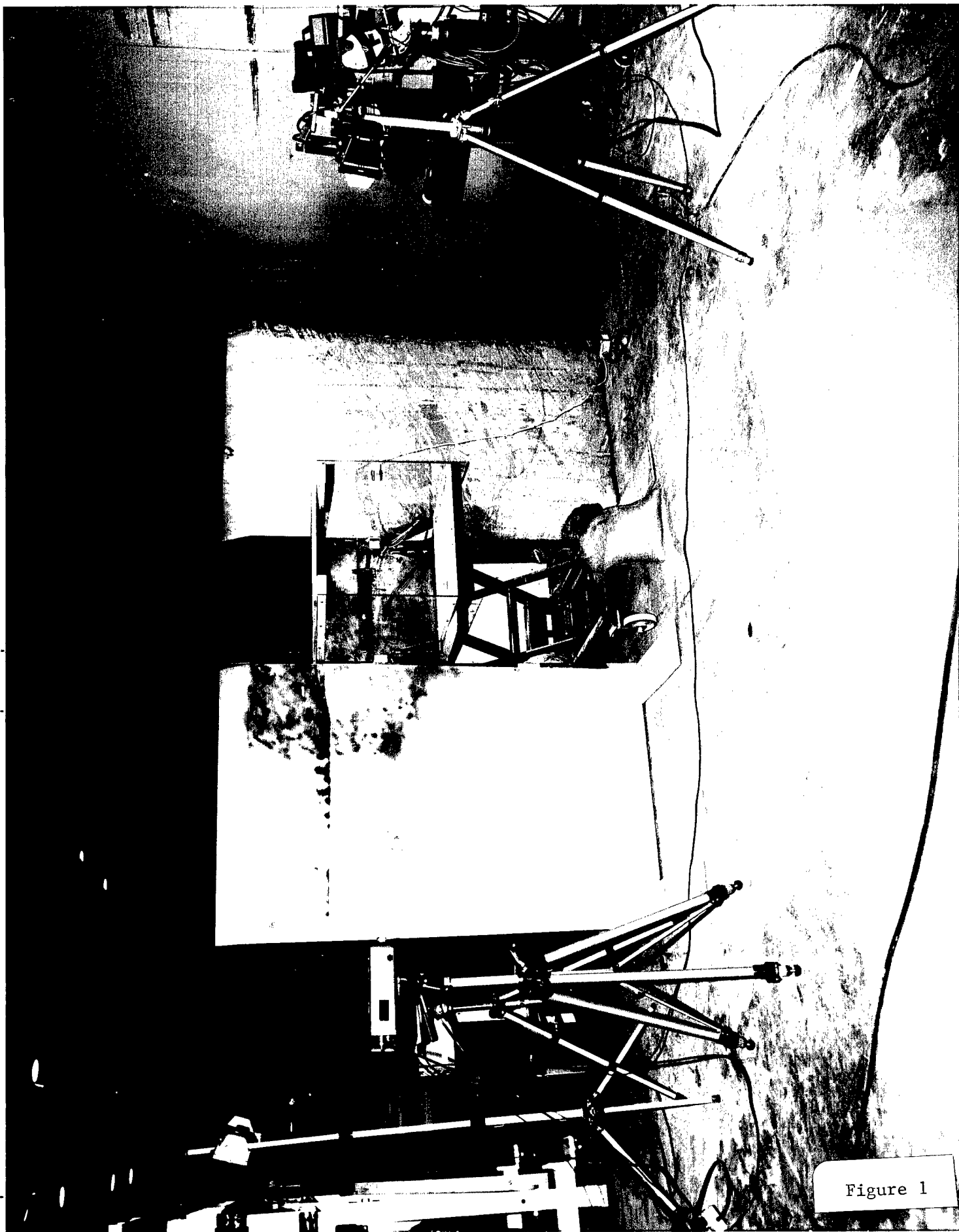


Figure 1

A0318-SCN-96-08.0174-2069-173

R&D Testing

M16A2 and M4 Carbine Barrel

Failure Test

Shot on 21 August 1996

Negative 10 of 12

Photographer: Tony Lopez

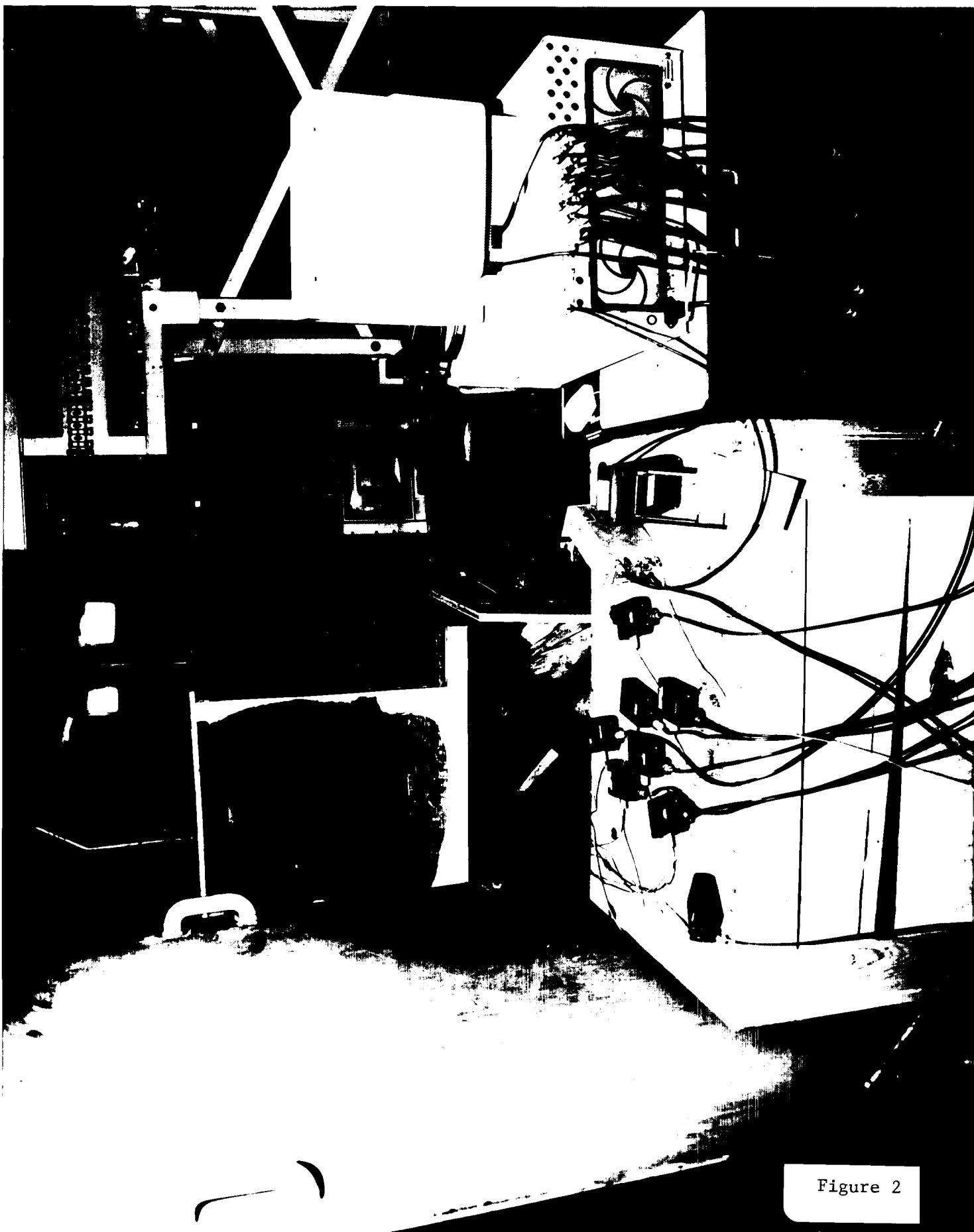


Figure 2

A0318-SCN-96-08.0174-2069-175

R&D Testing

M16A2 and M4 Carbine Barrel

Failure Test

Shot on 21 August 1996

Negative 12 of 12

Photographer: Tony Lopez

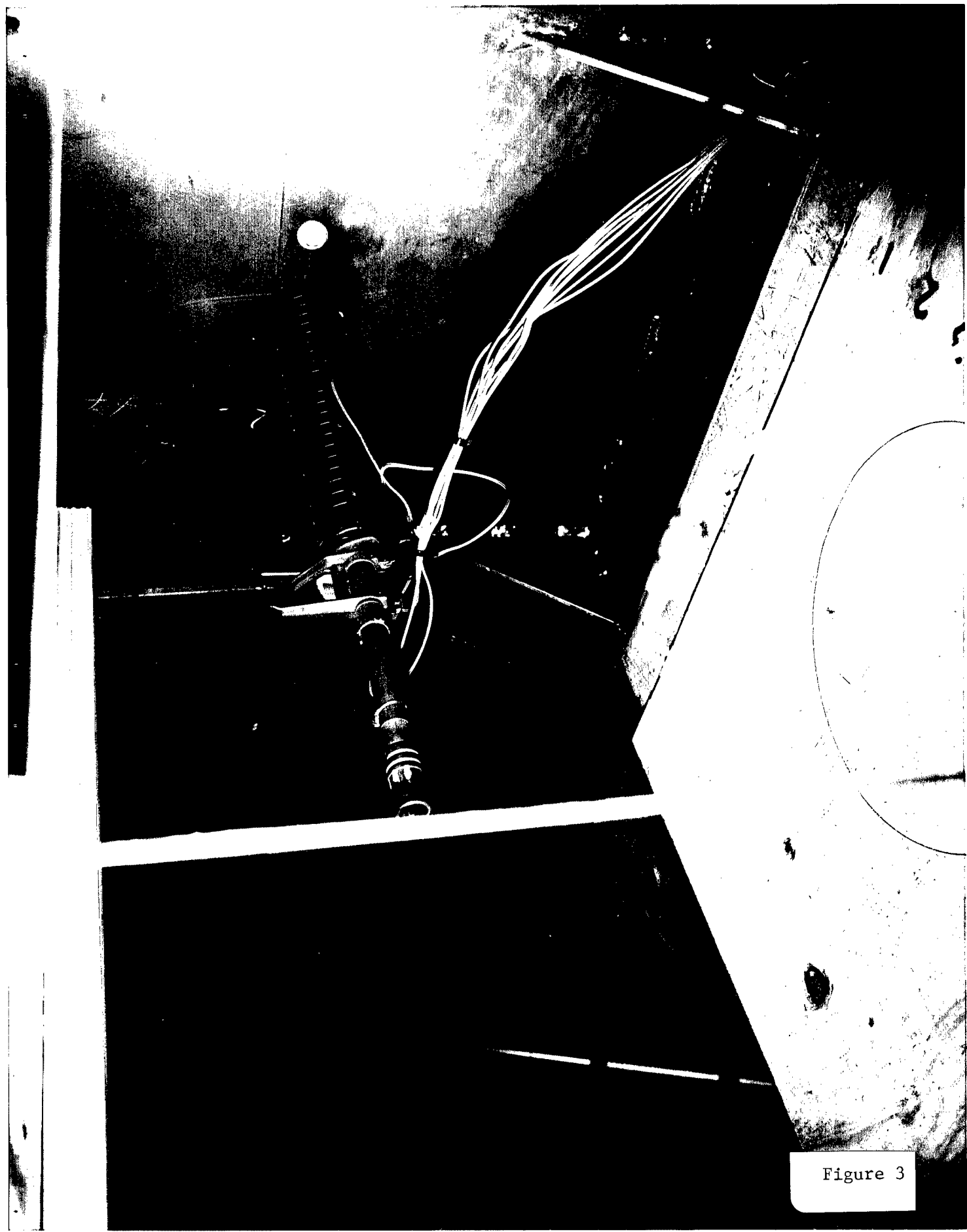


Figure 3



A0318-SCN-96-08.0174-2069-171  
R&D Testing

M16A2 and M4 Carbine Barrel  
Failure Test

Shot on 21 August 1996  
Negative 8 of 12

Photographer: Tony Lopez



Figure 4

A0318-SCN-96-08.0174-2069-172

R&D Testing

M16A2 and M4 Carbine Barrel

Failure Test

Shot on 21 August 1996

Negative 9 of 12

Photographer: Tony Lopez

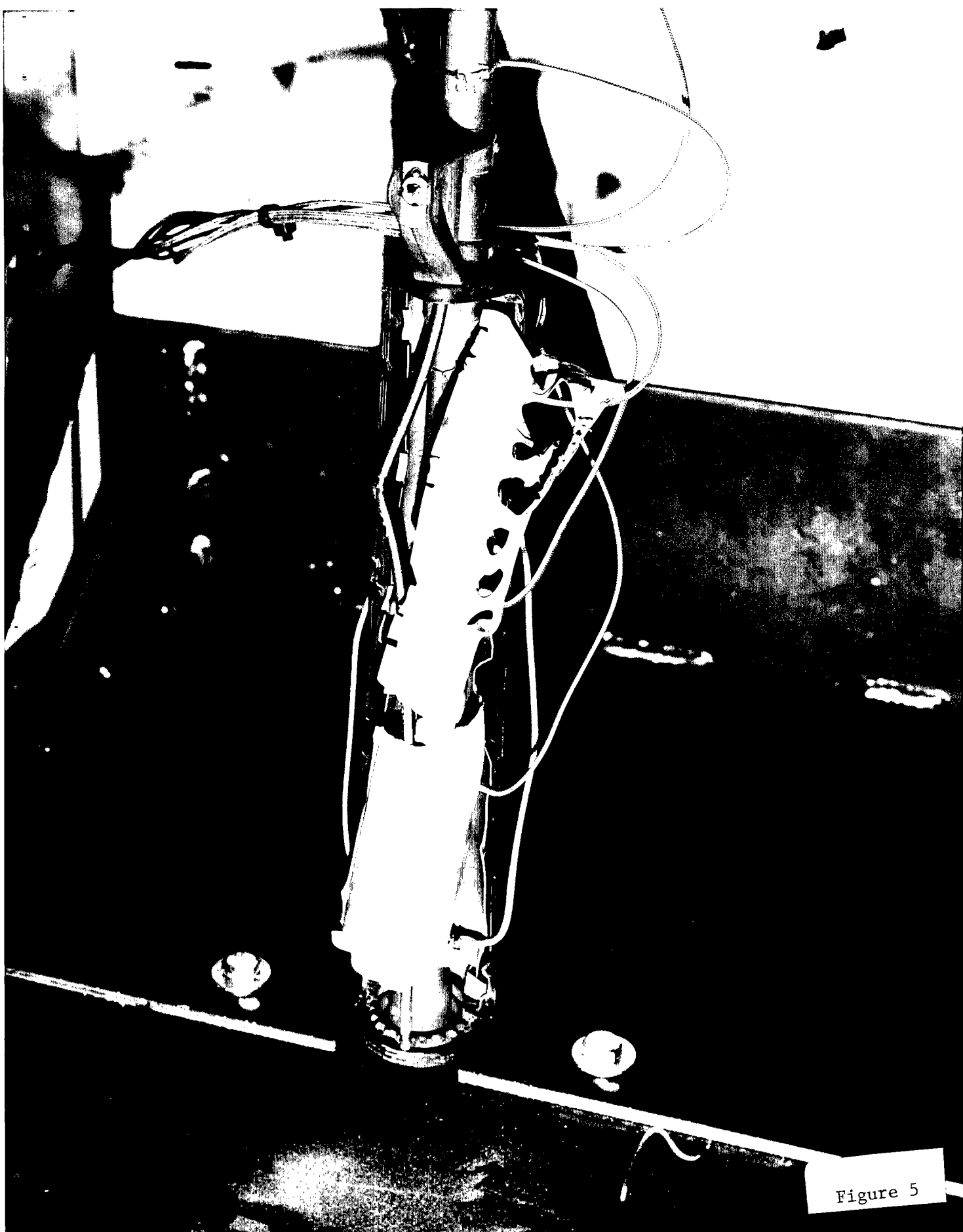


Figure 5

A0318-SCN-96-08.0174-2069-170

R&D Testing

M16A2 and M4 Carbine Barrel

Failure Test

Shot on 21 August 1996

Negative 7 of 12

Photographer: Tony Lopez

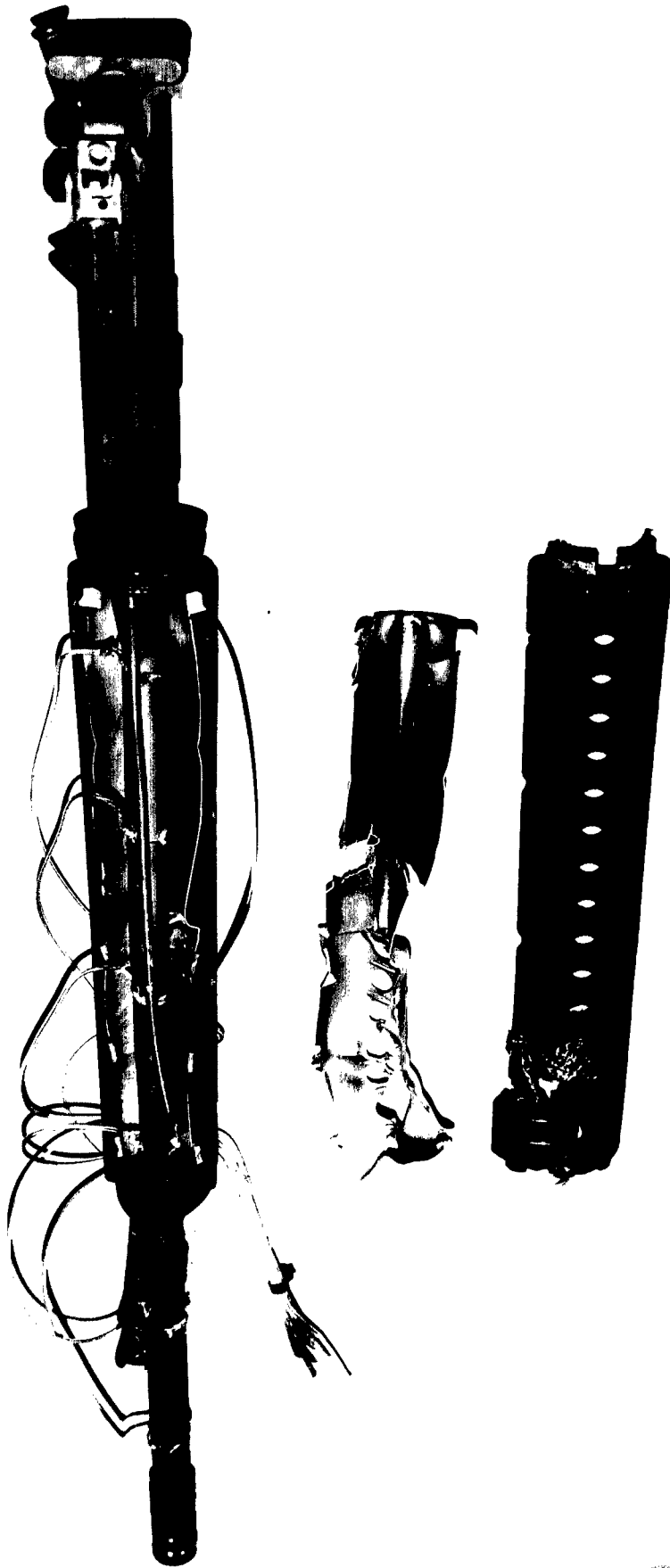


Figure 6

A0318-SCN-96-08.0174-2069-165

R&D Testing

M16A2 and M4 Carbine Barrel

Failure Test

Shot on 21 August 1996

Negative 2 of 12

Photographer: Tony Lopez

# M16A2 Barrel Burst Test

491 rounds 2 min 48 sec

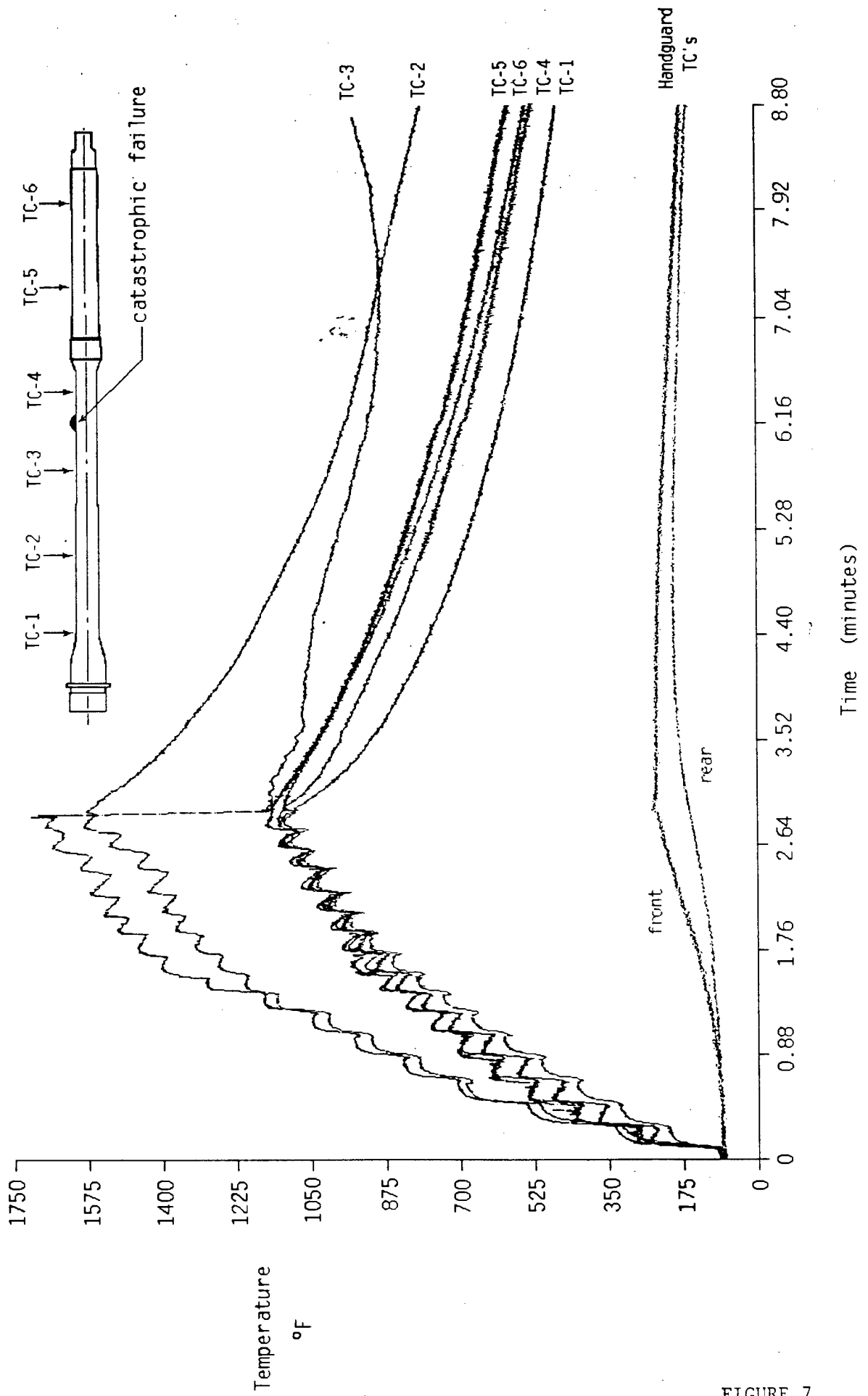


FIGURE 7



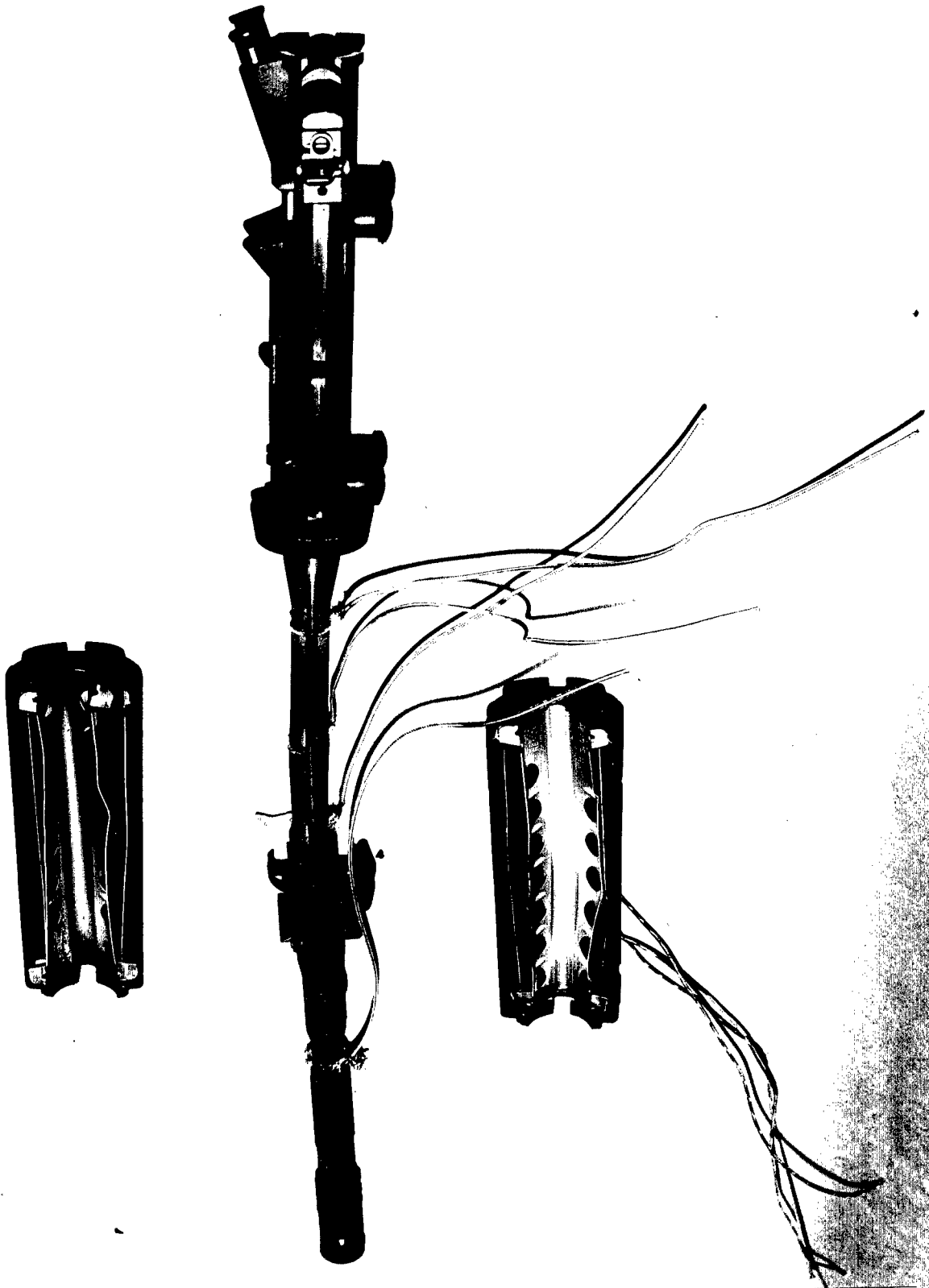


Figure 8

A0318-SCN-96-08.0174-2069-164

R&D Testing

M16A2 and M4 Carbine Barrel

Failure Test

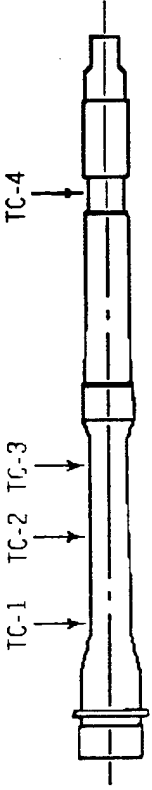
Shot on 21 August 1996

Negative 1 of 12

Photographer: Tony Lopez

# M4 Carbine Barrel Burst Test #1

540 rds 2 min 49 sec



no failure but barrel badly deformed

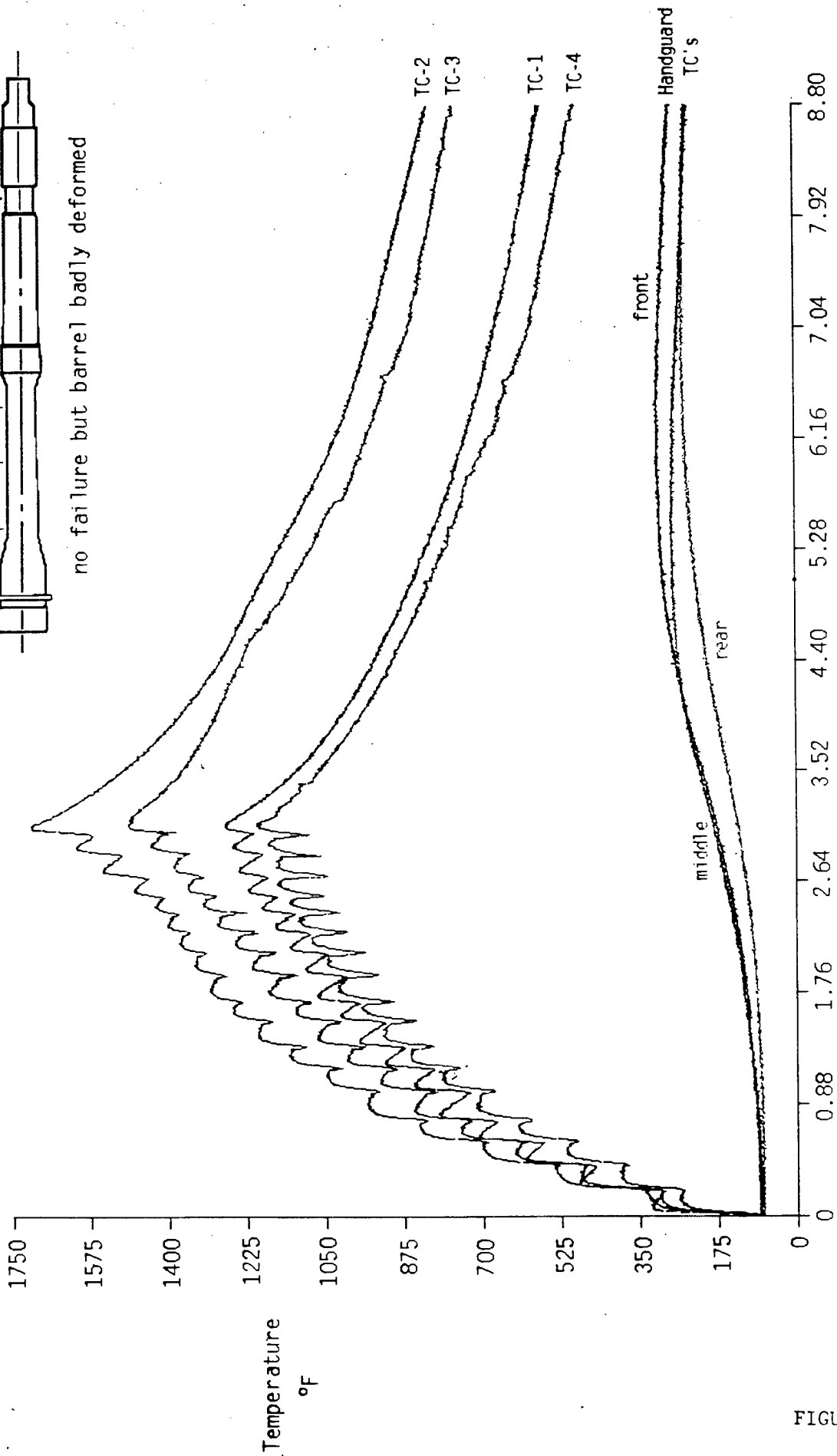


FIGURE 9



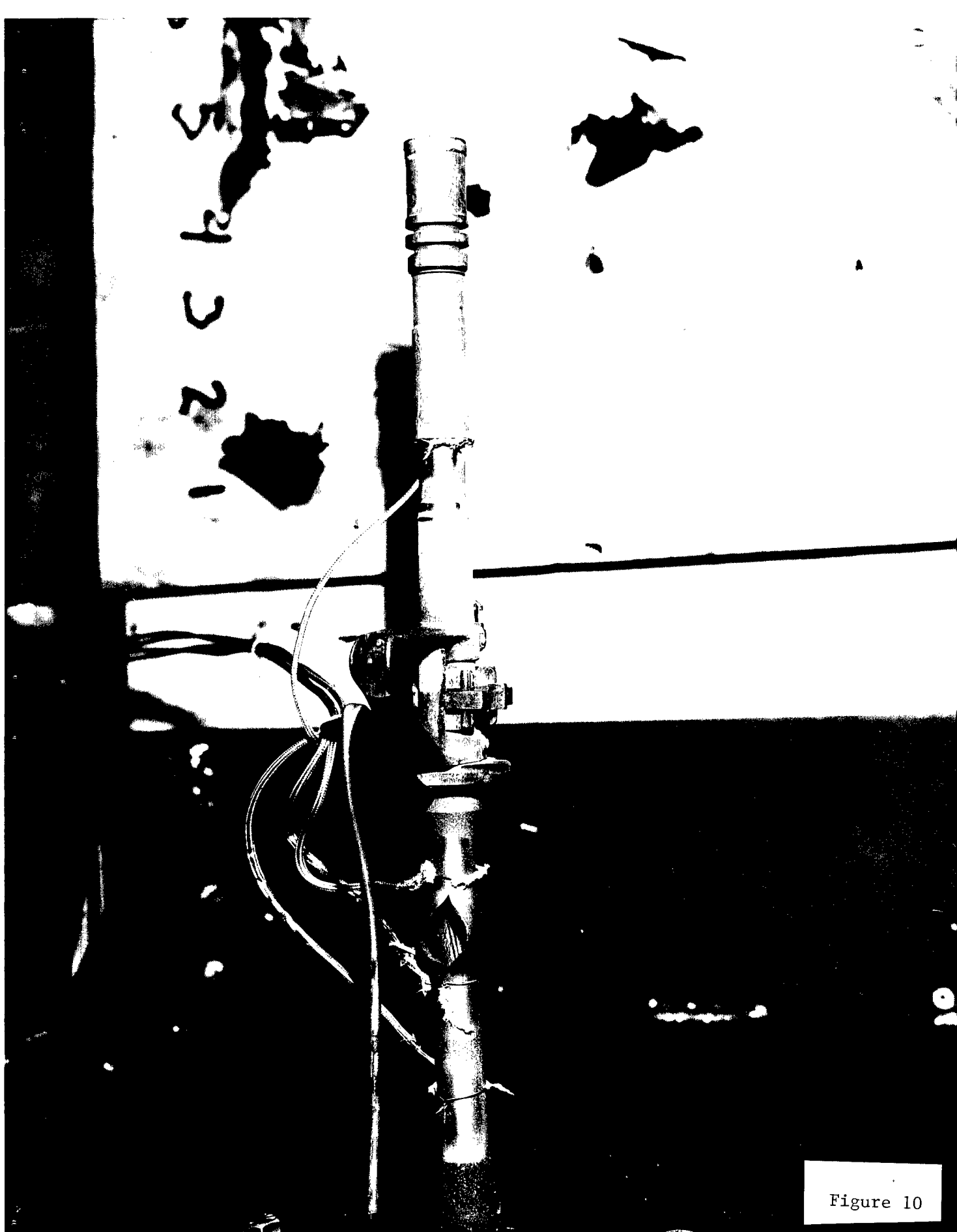


Figure 10

A031B-ECN-96-08.0174-2069-167

R&D Testing  
M16A2 and M4 Carbine Barrel  
Failure Test

Shot on 21 August 1996

Negative 4 of 12

Photographer: Tony Lopez



Figure 11

A0318-SCN-96-08.0w74-2069-166

R&D Testing

M16A2 and M4 Carbine Barrel

Failure Test

Shot on 21 August 1996

Negative 3 of 12

Photographer: Tony Lopez



# M4 Carbine Barrel Burst Test #2

596 rds 3 min 32 sec

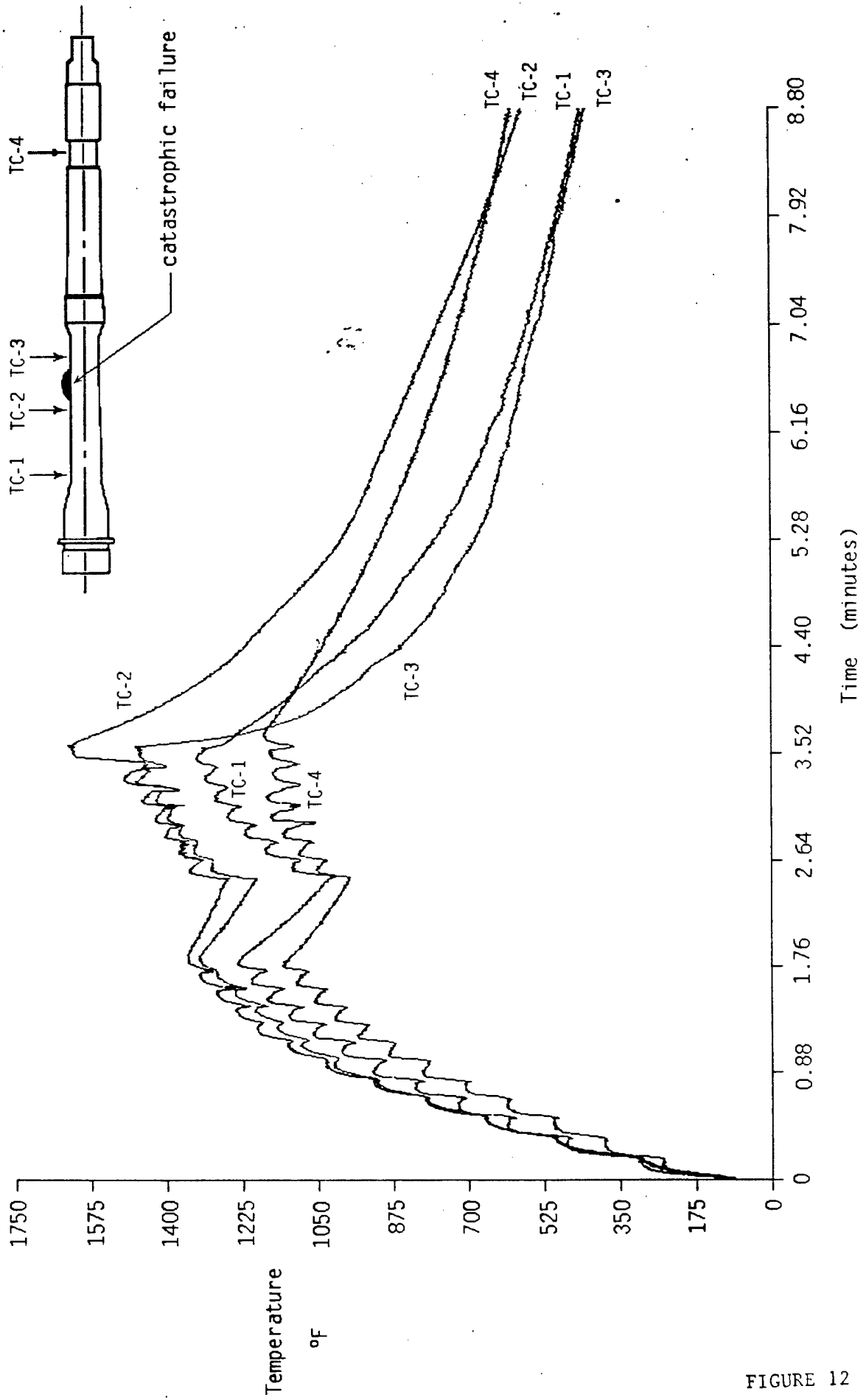


FIGURE 12

M4 and M16A2 Barrel Burst Test					
	peak temperatures (F)				
Distance	M16 barrel	M16 guard	M4 barrel #1	M4 guard	M4 barrel #2
1.5				259	
2	1131		1279		1337
2.5		230			
4			1713	283	1640
5	1599				
5.5			1495		1483
6.75				315	
8	1690				
11	1194	337	1163		1181
15	1161				
18	1159				
20					

M4 and M16A2 Temperature Profile

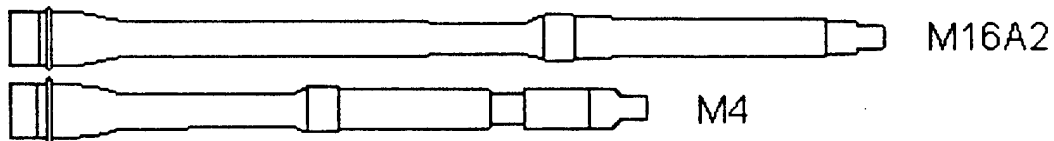
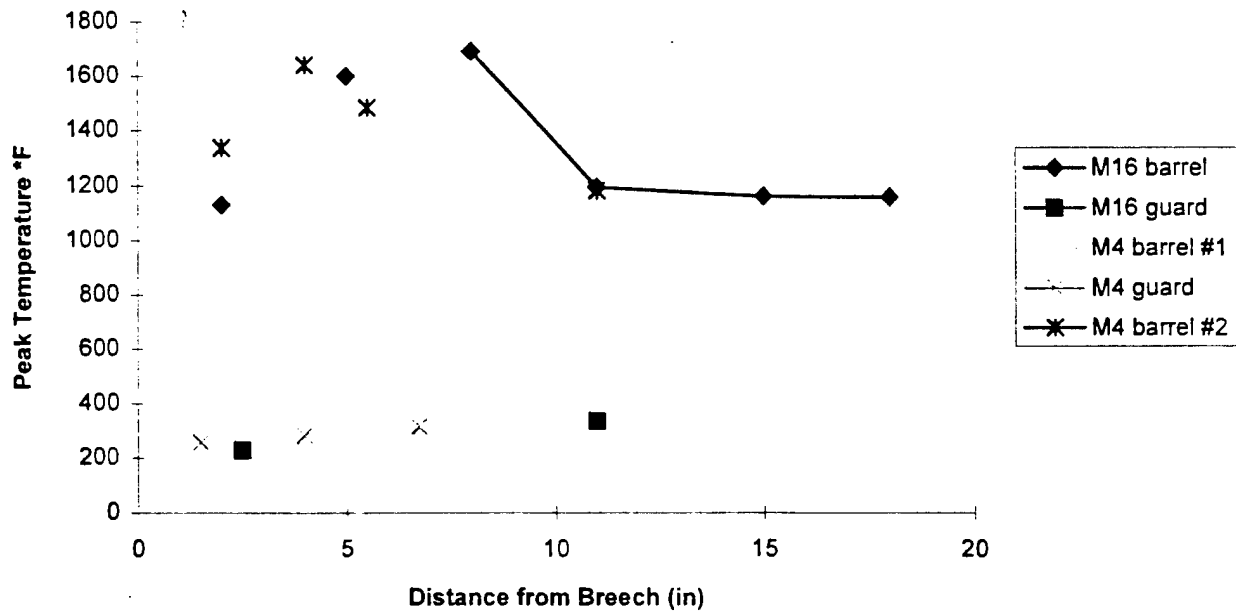


FIGURE 13

ROCK ISLAND ARSENAL

REQUEST FOR TEST AND LABORATORY RESULTS

LAB. NUMBER 96-1881	DATE RECEIVED: 28 AUG 96	PURCHASE ORDER NUMBER:	ITEM NUMBER:	DATE: 28 Aug 96
QA NUMBER:	EX. ORDER NUMBER:	REQN NUMBER:	CHARGE TO: 1A6A6DJE1AMJ	
CHECK APPLICABLE BLOCK: <input type="checkbox"/> PARTICULATE CONTAMINATION <input type="checkbox"/> CHEMICAL ANALYSIS <input checked="" type="checkbox"/> FAILURE ANALYSIS <input type="checkbox"/> OTHER				
MATERIAL: M4 barrel				
SIZE:	QTY:	SPEC NUMBER:	REC'D FROM:	INSP/PHONE: Jeff Windham / 28162

RESULTS: The test results are contained in Table I and Figures 1-3.

DISCUSSION: The hardness survey and microstructural analysis of the barrel indicates this barrel failed similar to previously examined barrels, lab reports 95-0879 and 96-1701. Since this barrel is known to have failed at 1700 deg. Fahrenheit it follows that the previously examined barrels would have also reached the same temperature, not the previously reported 1500 deg. F.

*Steve Countryman*  
Steve Countryman  
Metallurgist  
SIORI-SEM

TABLE I  
CHEMICAL ANALYSIS

ELEMENT	REQUIREMENTS	RESULTS (%)
	MIL-B-11595 CR-MO-V	#1
CARBON	0.41 - 0.49	0.50 *
MANGANESE	0.60 - 0.90	0.82
PHOSPHORUS	0.040 MAX	0.018
SULFUR	0.040 MAX	0.027
SILICON	0.20 - 0.35	0.23
CHROMIUM	0.80 - 1.15	1.06
MOLYBDENUM	0.30 - 0	0.37
VANADIUM	0.20 - 0	0.26

\* carbon is within test error.

*Copy to  
D. Assadi*

LABORATORY RECOMMENDATION:

Accept     Reject     For Information Only

*Richard W. Perry*  
DR. RICHARD W. PERRY  
(SIGNATURE)

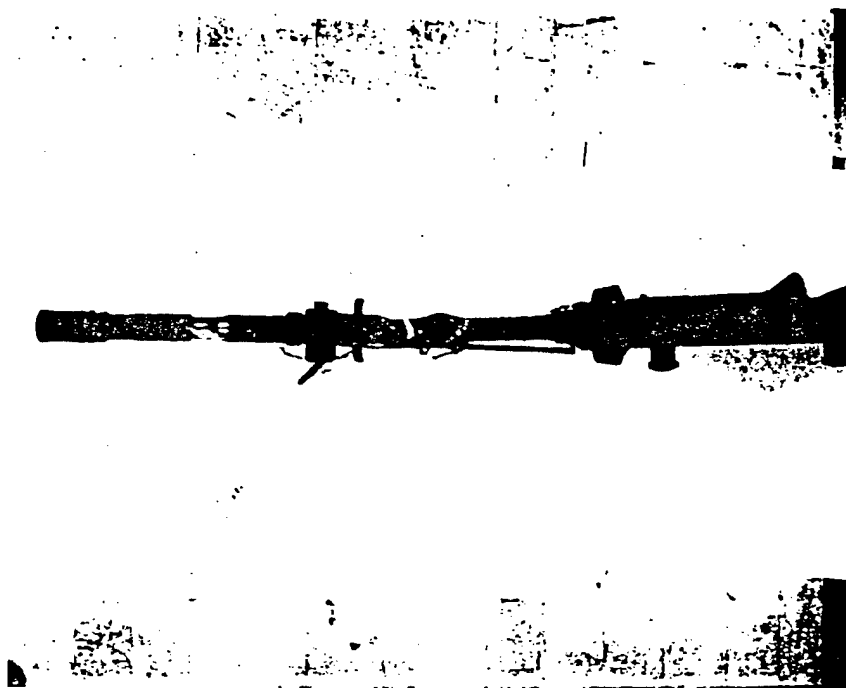


FIGURE 1

Burst Barrel

Barrel before sectioning for examination

SPECIMEN NO.: M4

MAGNIFICATION: 0.25X

~~ETCH:~~

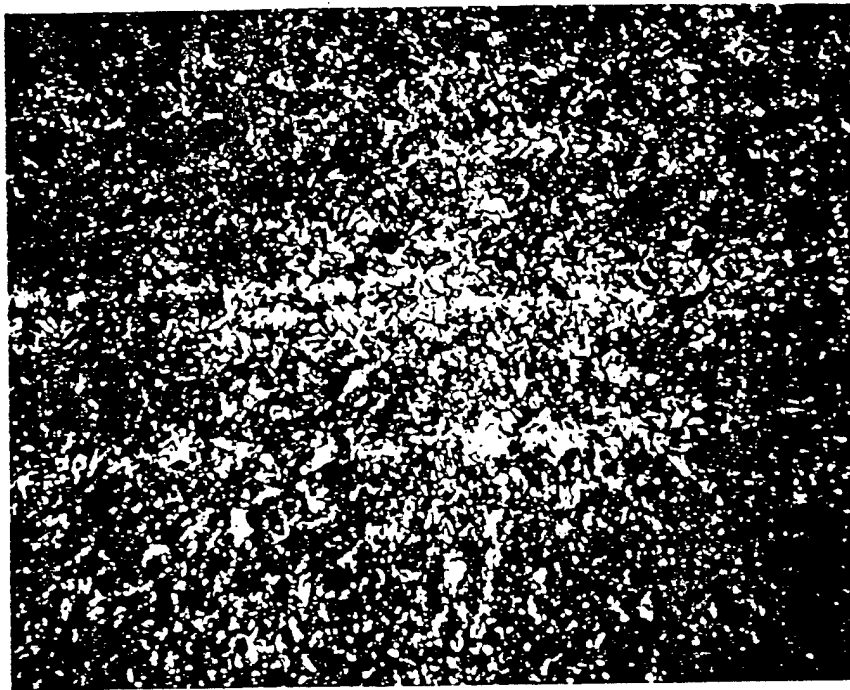


FIGURE 2

Microstructure of Steel at Burst

A mixed microstructure is present  
Slow cooling from 1700 °F could  
result in this microstructure

SPECIMEN NO.: M4

MAGNIFICATION: 500X

ETCH: Nital

6-1881

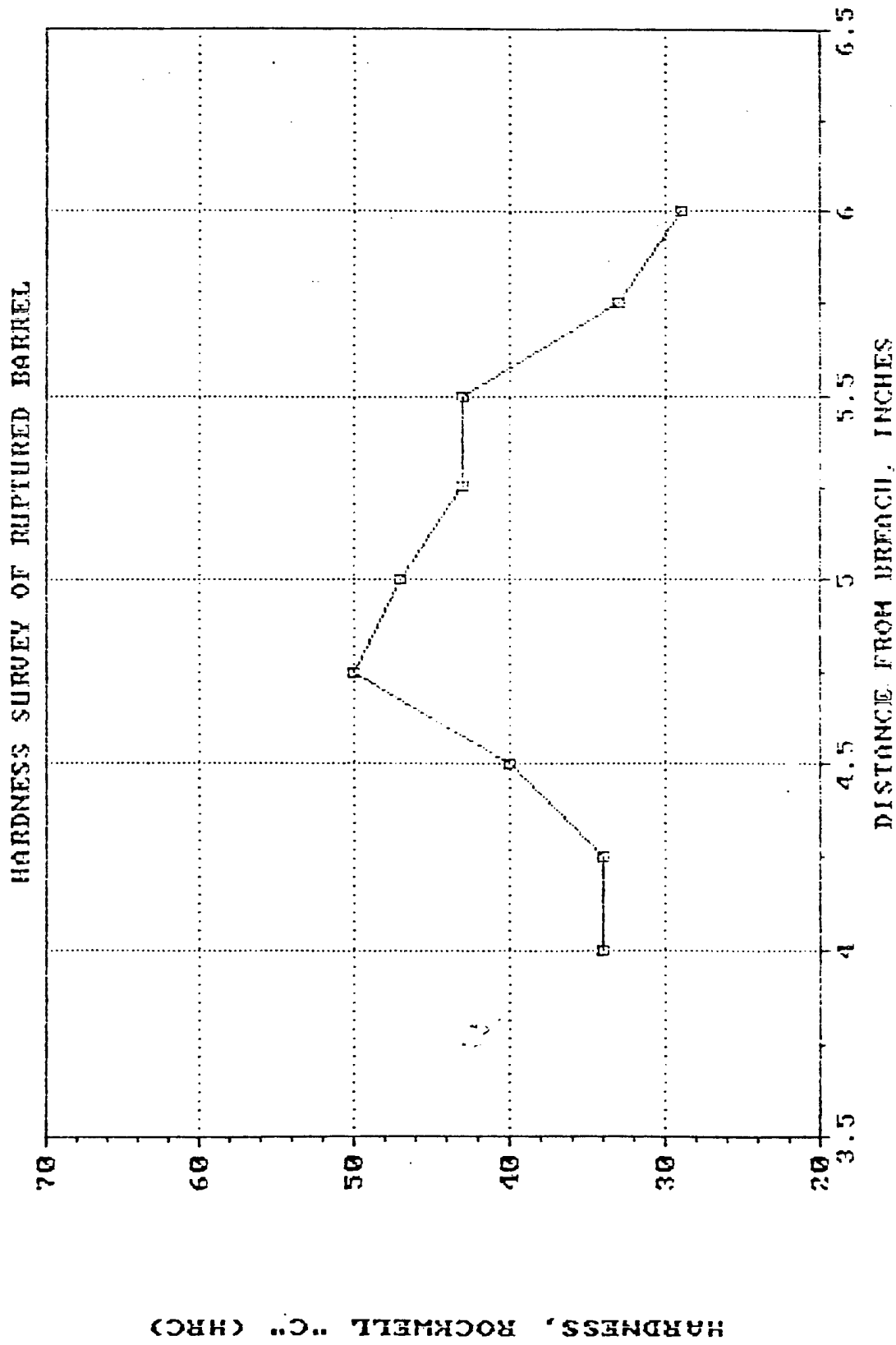
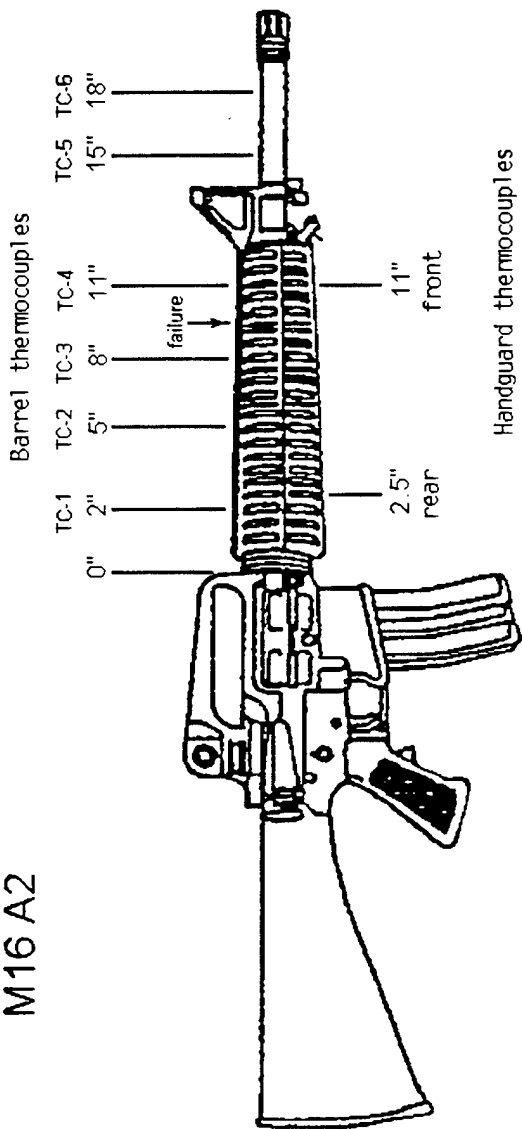
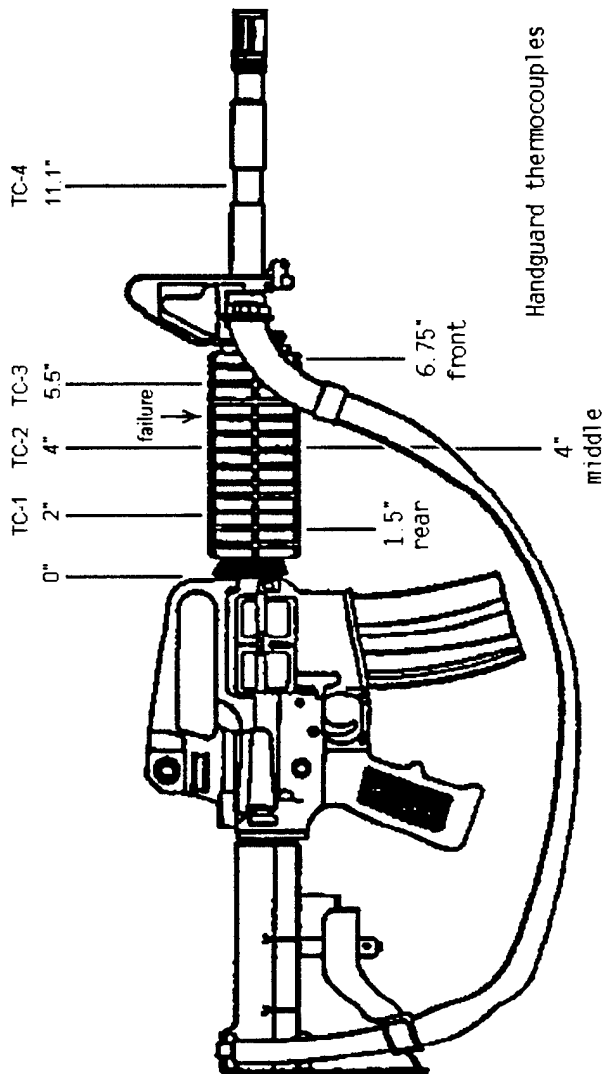


Figure 3

### M16 A2



### M4 carbine



M-4A1 CARBINE ACCIDENTS/COOK-OFF INCIDENTS

THIS IS ALL THE INFORMATION AVAILABLE AT THE MOMENT. WE ARE TRACKING ANY AVAILABLE SOURCE FOR INFORMATION. OUR DCSLOG IS AWARE OF THE SITUATION. WE WILL BRIEF THE USASPC CoS.

- \* June 1995: The 10 SFG(A) reported two incidents of "cook-off's" with the M-4; no injuries.
  - \* September 1995: The 1/1st SFG(A) reported problems with "cook-off's" and various durability problems during a training mission in the Republic of Korea. Quality Deficiency Report's (QDR) submitted thru channels by unit.
  - \* May 1996: The 7th SFG(A) reported malfunction (weapon exploding) during training at Ft. Bragg, NC.
  - \* August 1996: The 3rd SFG(A) reported a problem associated with rounds lodging in weapon causing destruction of weapon during a training mission in Africa. One soldier injured by shrapnel from exploding weapon. Unit imposed a cease-fire until USAEUR personnel could investigate. The findings of the investigation are unknown, however, the incident and continuation of the unit's self-imposed cease-fire caused an excess of ammunition to be left over at the end of the mission.
  - \* August 1996: 1/75th RGR: Unit reported cook-off during a live-fire ambush exercise. Soldier shot self in finger during recovery of equipment (magazines). Incident could result in a possible permanent partial disability (loss of finger).
  - \* August 1996: (most recent incident) 5th SFG(A) reported an M-4A1 damaged by a cook-off during a live fire exercise at Ft. Bliss, Texas. The soldier attempted to clear the malfunction when the cook-off occurred. The cook-off damaged the upper receiver and jammed the bolt carrier to the rear. The report received mentioned a second weapon damaged in a separate incident (the range commander suspended any further firing of ammo [lot # LC92J103004]).
- USASOC Safety Office submitted a message to the field reference dated 20 May 96 (201327Z May 96) subject: Reporting Requirements Associated with Weapons or Munitions Malfunctions, Misfires, or Hangfires to facilitate capturing any M-4A1 carbine incident.



83/13

We understand that Rock Island Arsenal is studying the problem and we are trying to contact them to capture any initial findings.

08/19/1996 21:11

2184875859

B 2/5 SFG(A)

PAGE 02

## SERIOUS INCIDENT REPORT

1. DATE TIME GROUP: 192110Z AUG 96
  2. LOCATION: DONA ANA RANGE COMPLEX, FT. BLISS TX - RANGE 52.
  3. PERSONNEL AND EQUIPMENT INVOLVED: M4 RIFLE AND SSG EDWARD C. BAKER
  4. UNIT ASSIGNED AND UNIT IDENTIFICATION CODE (UIC):  
(UNIT): B CO, 2/5<sup>TH</sup> SFG(A) (UIC): WHO5BO
  5. CLASSIFICATION OF ACCIDENT AND TOTAL COST: NOT KNOWN.
  6. PERSONNEL INVOLVED/DUURED; NO INJURIES.
- | NAME                  | [REDACTED] | RANK                  |
|-----------------------|------------|-----------------------|
| EDWARD C. BAKER       |            | SSG                   |
| STEVEN L. SCHMIDT     |            | WO1 (OIC OF RANGE 52) |
| RICHARD D. STEPHENSON |            | MSG (RSO OF RANGE 52) |
7. ON OR OFF DUTY: ON DUTY.
  8. WAS ACCIDENT DUE TO TRAINING: YES, IT OCCURED DURING THE CONDUCT OF A M4 CARBINE RANGE.
  9. ACTION BEING PERFORMED AT TIME OF ACCIDENT: SSG BAKER WAS FIRING M4 CARBINE IN THE AUTOMATIC MODE WHEN THE BARREL RUPTURED.
  10. EXTENT OF INJURIES OR PROPERTY DAMAGE: THERE WERE NO INJURIES. ONE M4 CARBINE, SN W301894, HAS BARREL, HAND GUARDS, AND GAS TUBE DAMAGED BEYOND REPAIR.
  11. NARRATIVE REPORT OF THE CIRCUMSTANCES OF THE ACCIDENT: SSG EDWARD C. BAKER WAS CONDUCTING RANGE FIRE USING BALL AMMUNITION ON RANGE 52, DONA ANA RANGE COMPLEX, FT. BLISS, TEXAS. WO1 STEVEN L. SCHMIDT WAS RANGE OIC, AND MSG RICHARD D. STEPHENSON WAS RANGE RSO. SSG BAKER FIRED APPROXIMATELY 13 ROUNDS FOR ZEROING, 40 ROUNDS PER QUALIFICATION, AND THEN TOOK A 20-30 MINUTE BREAK BEFORE CONTINUING TO FIRE. OVER THE NEXT 30 MINUTES, HE FIRED APPROXIMATELY 270 ROUNDS, BOTH SEMI AND FULL AUTOMATIC, AT KNOWN DISTANCE TARGETS. AFTER ANOTHER 20-30 MINUTE BREAK, HE FIRED APPROXIMATELY 240 ROUNDS, USING 3-5 ROUND AUTOMATIC BURSTS, AT KNOWN DISTANCE TARGETS. AFTER TAKING ANOTHER 20-30 MINUTE BREAK, HE FIRED APPROXIMATELY TWO MAGAZINES ON AUTOMATIC, USING SHORT BURSTS. WHILE FIRING A THIRD MAGAZINE, HIS BARREL RUPTURED, SHATTERING THE HAND GUARDS AND BENDING THE GAS TUBE. HE IMMEDIATELY PUT THE WEAPON DOWN AND REMOVED THE MAGAZINE. NO ONE WAS INURED. THE INCIDENT OCCURED AT 192110Z AUG 96.

THE ROUND EXITED THE TOP PORTION OF THE BARREL APPROXIMATELY 3 INCHES FROM THE CHAMBER, THE THINNEST PART OF THE BARREL. THE ROUND RIPPED A 1 1/2 INCH LONG BY 1/2 INCH WIDE RUPTURE IN THE BARREL. THE GAS TUBE WAS BENT AND THE HAND GUARDS DESTROYED. UPON FURTHER INSPECTION, WE NOTICED THAT THE FLASH SUPPRESSOR WAS LOOSE AND COULD BE UNSCREWED BY HAND.

PII Redacted

08/19/1996 21:11

9104875809

2/5 SFG(A)

PAGE 03

12. ACTIONS TAKEN BY THE REPORTING UNIT: COMMANDER NOTIFIED 2/5<sup>TH</sup> SFG(A) AND DONA ANA RANGE CONTROL.

13. INDIVIDUAL TO BE CONTACTED FOR FURTHER INFORMATION:

CPT DAVID M. WITTY	DONA ANA RANGE	B CO. 2 <sup>ND</sup> /5 <sup>TH</sup> SFG(A)	DEN 979-0353
SGM CLINTON L. QUEEN	DONA ANA RANGE	B CO. 2 <sup>ND</sup> /5 <sup>TH</sup> SFG(A)	DEN 979-0353
MSG KEN W. BARRIGER	DONA ANA RANGE	B CO. 2 <sup>ND</sup> /5 <sup>TH</sup> SFG(A)	DEN 979-0353

14. ADDITIONAL INFORMATION/REMARKS: THE COMMANDER BELIEVES THIS INCIDENT OCCURED BECAUSE OF DEFECTIVE AMMUNITION OR A DEFECTIVE BARREL. WEAPON WILL REDEPLOY TO FT. CAMPBELL FOR FURTHER INSPECTION.

ORIGINATOR: KENNETH W. BARRIGER, MSG, USA, OPNS NCO  
RELEASED BY: DAVID M. WITTY, CPT(P), SF, COMMANDING

*David M. Witty*  
200306Z Aug 96

**USASFC(A) STAFF ACTION SUMMARY SHEET**

<b>SUBJECT: M-4 RIFLE EXPLODED IN BOTSWANA DURING FLINTLOCK II B</b>				<b>DATE: 12 AUG 96</b>
<b>TO</b>	<b>INITIALS</b>	<b>DATE</b>	<b>COMMENT</b>	<b>POC OFFICE, TEL #:</b> CPT Daniels, 2-6107 AOSO-GCO-A
1. D, OPS	<i>[Signature]</i>	12 Aug		
2. C, OPS	<i>[Signature]</i>	12 Aug		<b>RETURN TO: G3</b>
3. DG3				
4. G3				<b>TASKER? YES/NO.</b> <b>CONTROL #</b>
5. SAFETY	<i>[Signature]</i>	12 Aug	Will board/inspect DES LOG	
6.				
7.				
8.				
<b>SGS USE ONLY</b>				
<b>DATE RECEIVED BY SGS:</b>		<b>LOGGED IN:</b>		<b>DATE OUT FROM SGS:</b>

- PURPOSE:** To update the initial oprep-3 report on the 3rd SFG(A) M-4 explosion incident during Flintlock II B in Botswana.
- DISCUSSION:** MAJ DEGNON IMPOSED A CEASE FIRE ON ALL M-4's UNTIL FURTHER INSTRUCTIONS ARE RECEIVED. THERE ARE 17000 RDS OF 5.56 REMAINING FOR TRAINING. MAJ DEGNON BELIEVES A ROUND WAS LODGED IN THE CHAMBER WHEN THE SECOND ROUND WAS FIRED CAUSING THE EXPLOSION.  
  
 TAB C: Initial Oprep-3, 082200ZAUG96, Subject: Explosion/destruction of a M-4 Rifle, EXER//Flintlock II B//  
 TAB B: Follow-up Oprep-3, 121350ZAUG96, Subject: Statement For Record, 3rd SFG(A) to USASFC(A), EXER//Flintlock II B//  
 TAB A: Follow-up Oprep-3, 121500ZAUG96, Subject: Statement For Record, USASFC(A) to USASOC, EXER//Flintlock II B//
- RESOURCE IMPACT:** N/A
- RECOMMENDATION:** For your signature, Sir

FOR OFFICIAL USE ONLY

TON: 121500ZAUG96  
POC: CPT DANIELS, ACOM CHIEF USASFC(A)  
TELE: (910) 432-6107  
FROM: CDRUSASFC(A) FT BRAGG, NC//AOSO-GCO-A//  
TO: CDRUSASOC FT BRAGG, NC//AOOP-OP//  
THE FOLLOWING STATEMENT WAS PROVIDED BY 3RD SFG(A) ON THE  
EXPLOSION/DESTRUCTION OF THE M-4 RIFLE:

STATEMENT FOR RECORD

I SSG AUBREY R. HAWKINS WAS AT THE RANGE FIRING MY M-4 AT APPROXIMATELY 1430-1445 7 AUG 96. SSG MORGAN AND MYSELF WERE FIRING AT VARIOUS TARGETS AND CYCLIC RATES. I FIRED THE FIRST MAGAZINE ON SEMI AUTOMATIC THAN CHANGED MAGAZINES AND FIRED THE SECOND MAGAZINE ON AUTOMATIC. WHEN I COMPLETED FIRING THE SECOND MAGAZINE, I LOADED A THIRD MAGAZINE AND PLACED THE WEAPON ON SEMI AND AIMED. I HEARD THE ROUND FIRE BUT I DID NOT THINK THAT THE ROUND EXITED FROM THE BARREL. I LOWERED THE WEAPON TO PERFORM IMMEDIATE ACTION WHEN THE WEAPON EXPLODED IN MY HANDS AND SENT HANDGUARD FRAGMENTS INTO MY FACE AND HEAD. NO INJURIES WERE SUSTAINED WHEN THE WEAPON EXPLODED. I THEN PULLED IMMEDIATE ACTION ON THE WEAPON AND CLEARED IT AND PUT THE WEAPON ON SAFE. I CALLED A CEASE FIRE AND MOVED BACK TO THE TENT AREA.

WEAPON SERIAL NO.	306033
NO. OF ROUNDS FIRED BEFORE	60
WHEN THE WEAPON WAS LAST FIRED	THE DAY PRIOR
WHEN WAS THE WPN LAST CLEANED	THE NIGHT PRIOR
RATE OF FIRE	SEMI
LOT NO. OF AMMO	LC-941-006 606/M193 BALL
CAUSE IF KNOWN	ROUND LODGED IN THE BARREL

FOR THE ACOFS, G3:

WERNER C. KRUEGER  
LTC, GS  
Chief, Operations Division

13 MAY 1996

SUBJECT: MALFUNCTION REPORT.

MALFUNCTION REPORTED BY: Bill Bowden, TACOM-ARMAMENT LAR.

A. LOCATION OF MALFUNCTION: Range 66F, Ft. Bragg, NC.

B. IDENTIFICATION OF UNIT: C Co, 2d Bn. 3d SFG, USASOC, ft. Bragg, NC.

C. DATE AND TIME OF MALFUNCTION: 06 May 96, 1830 Hrs.

D. IDENTIFICATION OF WEAPON/ AMMUNITION:

WEAPON: Carbine, 5.56mm M4A1, NSN: 1005-01-382-0953, SN: W305902.

AMMUNITION: DODAAC #: A066, 5.56mm Ball, LOT NUMBER: LC95C0005-612.

E. NUMBER OF FATALITIES/INJURIES: None.

F. PROPERTY DAMAGE: Barrel Assy, PN: 9390009

Guard Hand 2ea NSN: 1005-01-234-2297

Gas Tube, 1 ea, NSN: 4710-01-233-8637

G. DESCRIPTION OF MALFUNCTION: The operator had been firing at a sustained rates of more then 300 rounds per minute. He was firing on his 4th 30 round magazine when a round blew out the left side of the barrel, approximately 4 3.4 inch forward of the breech.

H. OTHER INFORMATION CONSIDERED PERTINENT: Inspection of the weapon by this LAR, show excessive heat to the point that the phosphate coating was discolored. The barrel was bent to the right about 5 to 10 degrees. The hole in the barrel was approximately 1 1/2 inches long and 1 inches wide. The gas tube was bent upward and to the right. The top hand guard was broken in two places at the rupture point. The bottom handguard inner and outer liners was deformed.

1. WAS ANY RADIATION DEVICES INVOLVED? No.

2. NAME OF ITEM: N/A

3. IF SO WAS THE SOURCE DAMAGED? N/A

4. IF DAMAGED WAS A WIPE TEST PERFORMED? N/A

I. DATE AND TIME OF REPORT PREPARATION: 15, May 1996, 1700 EDT.

J. SOURCE OF INFORMATION FOR THIS REPORT: Maj. Meddaugh, The Operator, SFC. Jones, C, Co, 2d Bn, 3d SFG, Mr. Al Whittekiend, USASOC Safety, Mr. Rock Roberton, USASOC DCSLOG.

Bill Bowden, TACOM-ARMAMENT LAR, 1ST COSCOM FT. BRAGG, NC, DSN: 236-0395, E-MAIL BBOWDEN.