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EVALUATION OF THE COLT-ARMALITE AR-15 AUTOMATIC RIFLE

Caliber .223

Aug 1960

USAF MARKSMANSHIP SCHOOL
LACKLAND MILITARY TRAINING CENTER (ATC)
Lackland Air Force Base, Texas

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USAF MARKSMANSHIP SCHOOL
LACKLAND MILITARY TRAINING CENTER (ATC)
LACKLAND AIR FORCE BASE, TEXAS

9 August 1960

TO
OF: MMS-M/Maj Miller/3139

SUBJECT: Evaluation of AR-15

TO: LMTC (O)

1. The USAF Marksmanship School has been directed by the Vice Chief of Staff to conduct an evaluation of the AR-15, .22, automatic rifle. This weapon is a light weight, 6 lbs, semi and full automatic combat type weapon designed by the Armalite Corporation, and manufactured by the Colt Firearms Company. This weapon is undergoing extensive tests in Europe and Asia at the present time. Initial tests conducted by Aberdeen Proving Ground have indicated an excellent potential to meet Air Force weapon requirements. The Department of Defense has programmed the M-14, Caliber 7.62 NATO, rifle for all services use. Due to the inherent advantage to the Air Force of a light weight weapon and ammunition, the Vice Chief of Staff desires a comprehensive evaluation to be conducted at Lackland Air Force Base.
2. Ten AR-15's are on hand. An initial quantity of 5,000 rounds of ammunition is due in. It is anticipated that a quantity of approximately 50,000 rounds will be utilized in this test and evaluation. It has not been fully determined as to who will pay for or provide the ammunition. The above 5000 rounds will be provided by Remington Firearms, Inc. It may be necessary that this organization procure some quantity of the ammunition that is not forthcoming from other sources. Procurement is authorized under the provisions of AFR 65-7 and funds to cover the requirement are contained in our budget. No attempt to purchase ammunition will be made until all other possibilities are exhausted.
3. Approval is requested to work out a test evaluation program with the Air Police School and the 3720th Basic Military Training School wherein a representative number of trainees will utilize this weapon, firing the exact courses now required for carbine training. In that operation remains basically the same, the training with the new weapon will in no way detract from familiarization with the carbine. The new rifle is much more accurate and higher scores will result.
4. The USAF Marksmanship School personnel will conduct, simultaneously, various tests over long ranges, to include penetration, accuracy, function under field conditions, etc. Due to the limited number of weapons, it is proposed to alternate the rifles between the Air Police and the Range Section, consistent with training schedules, after adequate indoctrination of instructor personnel for the above evaluation which will obviously cover an extended period of time to fire approximately 5000 rounds through each weapon.

BURTON T. MILLER, Major, USAF
Materiel Officer

USAF MARKSMANSHIP SCHOOL
LACKLAND MILITARY TRAINING CENTER (ATC)
Lackland Air Force Base, Texas

22 September 1960

SUBJECT: Evaluation of the Colt-Armalite AR-15 Automatic Rifle,
Caliber .223

General Comments:

Hq USAF directed that the USAF Marksmanship School evaluate the Colt-Armalite Rifle.

On 18 July 1960, the USAF Marksmanship School received three AR-15 rifles for the conduct of the test. The AR-15 rifle is a gas operated, six pound rifle capable of either semi or fully automatic fire. The rifle is chambered for the .223 caliber cartridge. This cartridge is loaded with a 55 grain full metal jacket boat-tail bullet, approximately 25 grains of powder, and has a case length of 1.758 inches. The primer is non-corrosive and non-mercuric. The rifle can be equipped with a telescope and a bipod. On 1 August 1960, five additional rifles were secured.



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UNANNOUNCED

EVALUATION OF THE COLT-ARMALITE AR-15 RIFLE

1. PURPOSE: To evaluate the Armalite AR-15, caliber .223 rifle for USAF suitability. This evaluation will determine the following:

- a. Bench accuracy.
 - (1) With and without scope.
 - (2) With and without bipod and bayonet.
- b. Automatic accuracy.
 - (1) Prone
 - (a) With scope.
 - (b) Without scope.
 - (2) Offhand.
- c. Penetration.
- d. Bullet performance.
 - (1) Minimum range (25 yds)
 - (2) Intermediate range (150 yds)
 - (3) Maximum range (400-500 yds)
- e. Function when used by trainees.
- f. Accuracy when used by trainees.
- g. Suitability for Air Police work.
- h. Suitability for Base Defense.
- i. Function uncleaned (up to 5,000 rds). Control with weapon cleaned after each 500 rounds.
- j. Sand and dirt test (one weapon only).

k. If M-14's become available during the planned expenditure of 50,000 rounds of ammunition, use M-14 as comparative weapon.

l. Disassembly and assembly by trainees.

m. Compare reaction of trainees to each weapon, scores fired, handling, safety, etc.

n. No evaluation to be based on the carbine as it is already considered obsolete.

2. Personnel Participating:

a. USAF Marksmanship School

(1) Major Miller	Test Supervisor
(2) Lt Gorey	Project Officer
(3) Lt Grigsby	Asst Project Officer
(4) TSgt Duchek	Test and Evaluation Section
(5) SSgt Farris	Test and Evaluation Section
(6) Mr. Joe Cook	Civilian Gunsmith

b. Air Police Personnel: Major Kacprowski

3. Major B. T. Miller was reassigned to Turkey on 21 September 1960. Lt Gorey was appointed as Test Supervisor.

AR-15 Test of 26 July 60

One AR-15, Serial Number 324, was equipped with the telescope and fired at Camp Bullis on the 300 meter range. The 300 meter target was used.

Six 5 shot groups were fired by Lt Gorey from the prone position, utilizing a rest. Group size ran from 6 to 9 inches, extreme spread. This is considered ample accuracy for a combat rifle, as most shots fired in warfare situations are in the 75 - 100 yd category. This weapon is capable of consistent head shots at 300 meters. Approximately 140 rds were fired slow fire.

The full automatic feature was also tested with approximately 60 rounds. In letting off fast two shot bursts, approximately 80% of the bullets struck in a body silhouette area at 300 meter range.

No malfunctions occurred in firing 240 rounds without cleaning the weapon.

AR-15 Test of 1 August 1960

Test Personnel:

Major Miller
Mr. Dorchester
Mr. Stoner
Lt Gorey
TSgt Duchek
SSgt Farris

Also present were General Stillman, his Staff Officers, and Air Police personnel.

Lt Gorey fired a number of groups at 100 yds to test accuracy. These groups were fired using both Norma and Remington ammunition. These groups were fired both with and without bayonet. All groups were fired using the telescope.

Both the Remington and the Norma ammunition had the same point of impact (zero). The bayonet configuration had no effect upon the zero.

Group sizes were inconclusive due to a loosening of the scope mount after every 15 rounds. This defect was brought to the attention of the Armalite Representative and new scope mounts were obtained. No loosening of the mount occurred with the new product.

A demonstration was made by Mr. Stoner as to full automatic fire capability of both the AR-15 and the AR-10. Further demonstration was made as to the effectiveness of the grenade launcher, using either the anti-tank or the anti-personnel grenade.

USAF MARKSMANSHIP SCHOOL
LACKLAND MILITARY TRAINING CENTER (ATC)
LACKLAND AIR FORCE BASE, TEXAS

BY TO
N OF. MMS-M-E/Lt Gorey/36240

22 September 1960

SUBJECT: Helmet Penetration Test

TO: MMS-C

1. The Test and Evaluation Branch, USAF Marksmanship School, conducted helmet penetration tests from 12 - 16 September. The purpose of this test was to determine the penetrating ability of the .223 cartridge fired from the Armalite AR-15 rifle at steel helmets. All firing was conducted on the known distance (FOX) range, Camp Bullis, Texas, or at the Mitchell Lake Range, San Antonio, Texas. The following named officer and airmen conducted the tests:

1Lt Richard J. Gorey, 56715A
SSgt Randall Farris, AF 15046831
SSgt Garold Fuller, AF 19604091

2. The following test results are submitted for your information:

a. Range - 200 yards. A glancing shot was fired to determine if the bullet would ricochet off a steel helmet. The projectile struck the helmet at approximately a 35° angle and passed completely through both sides of the helmet. (Photo #1)

b. Range - 300 yards. A center helmet shot was fired to determine the penetrating ability of the bullet. The projectile passed completely through both sides of the helmet. (Photo #2)

c. Range - 300 yards. A shot was fired to determine the effect of a glancing hit at a double thickness of helmet (one helmet inside another). The projectile passed through the first two layers of steel, ricocheted off the interior, then penetrated one layer of the helmet. The exterior thickness of helmet was bulged but not broken. (Photo #3)

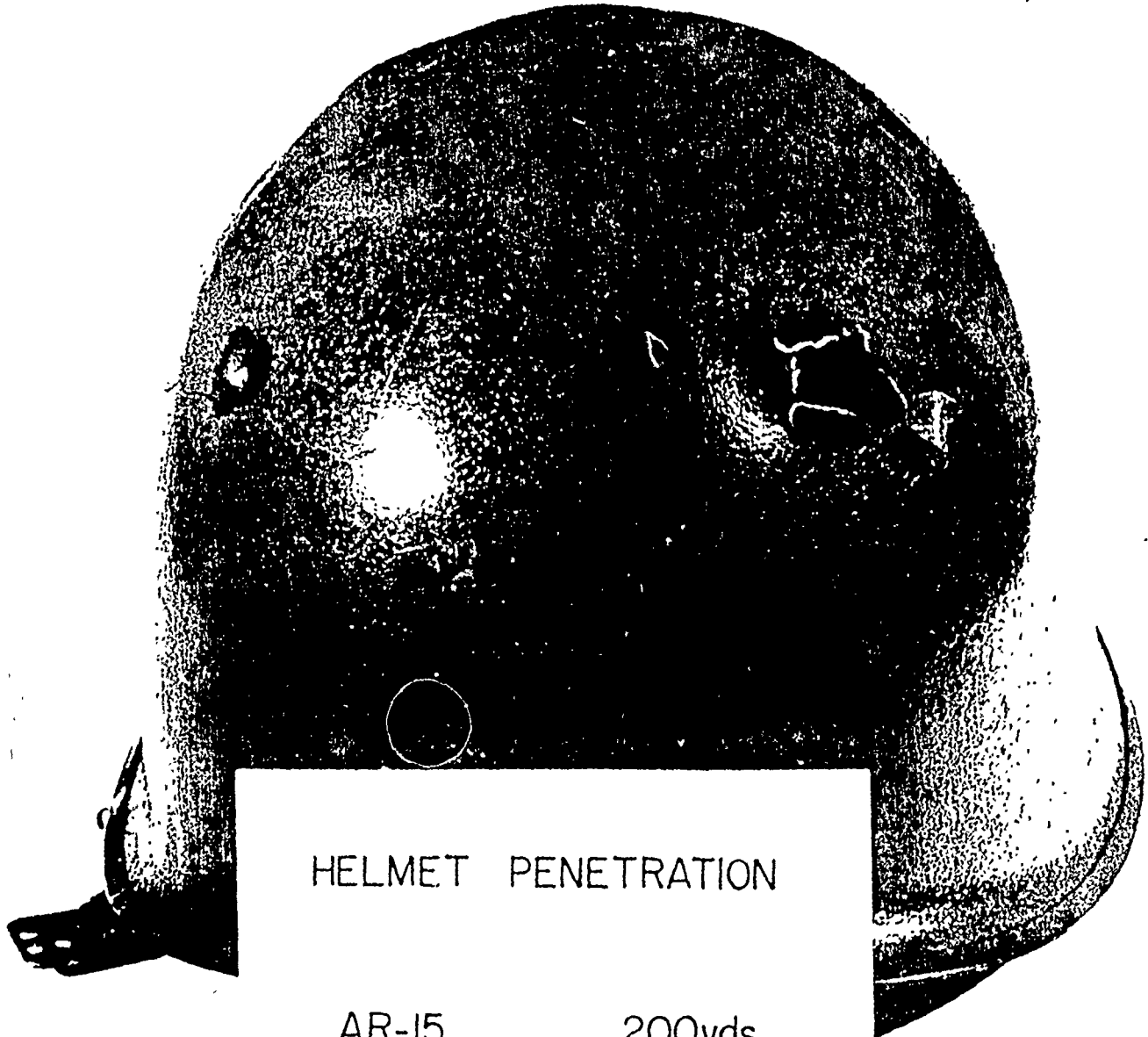
d. Range - 300 yards. A center helmet shot was fired to determine the penetrating power of the bullet when fired at a double thickness of helmet. The bullet passed completely through both helmets. (Photo #4)

e. Range - 400 yards. Several shots were fired at various angles to determine the penetrating and ricocheting characteristics of the bullet. All projectiles penetrated or severely creased the helmet. (Photo #5)

f. Range - 500 yards. A center helmet shot was fired to determine the bullet penetrating ability at this range. The projectile passed completely through both sides of the helmet (Photo #6).

g. Range - 600 yards. A center helmet shot was fired to determine the penetrating characteristics of the bullet at this range. The projectile passed through one side of the helmet, severely bulged but did not penetrate the opposite side. (Photo #7) The helmet was suspended by a government issue belt. One shot penetrated completely the belt buckle.

RICHARD J. GOREY
1Lt, USAF

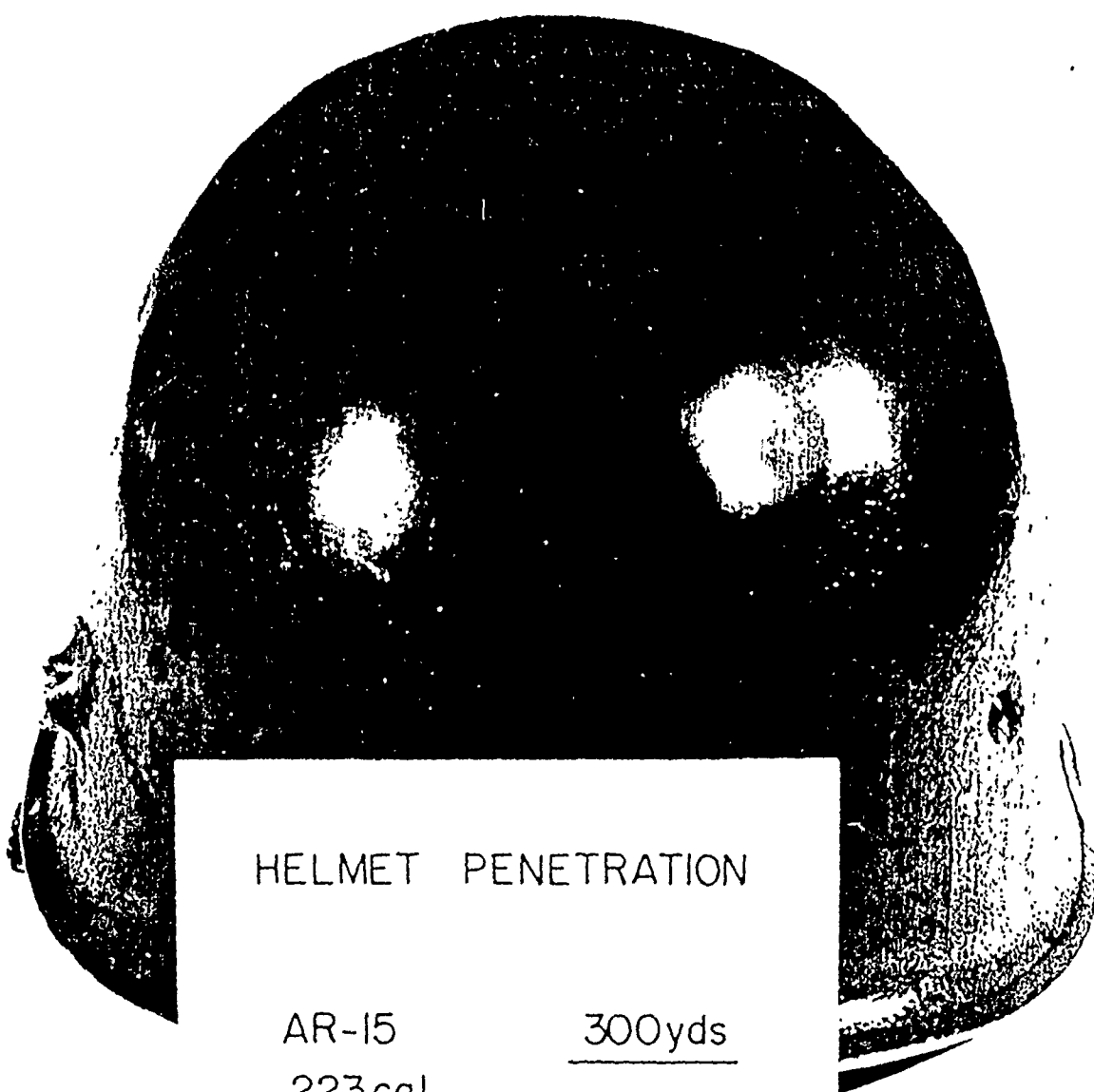


HELMET PENETRATION

AR-15
.223cal.

200yds

(1)



HELMET PENETRATION

AR-15
.223cal.

300yds

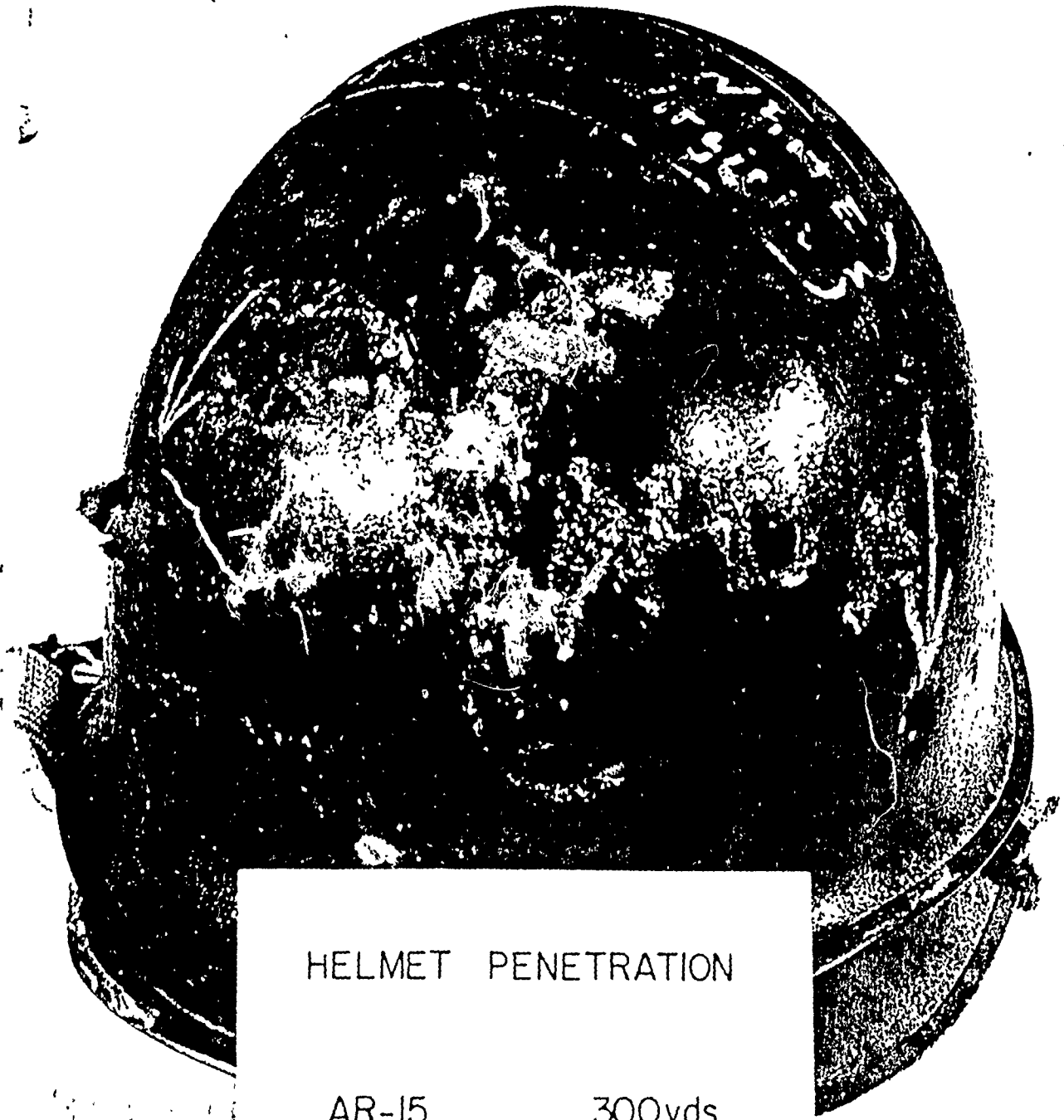


HELMET PENETRATION

AR-15

300yds

.223cal.



HELMET PENETRATION

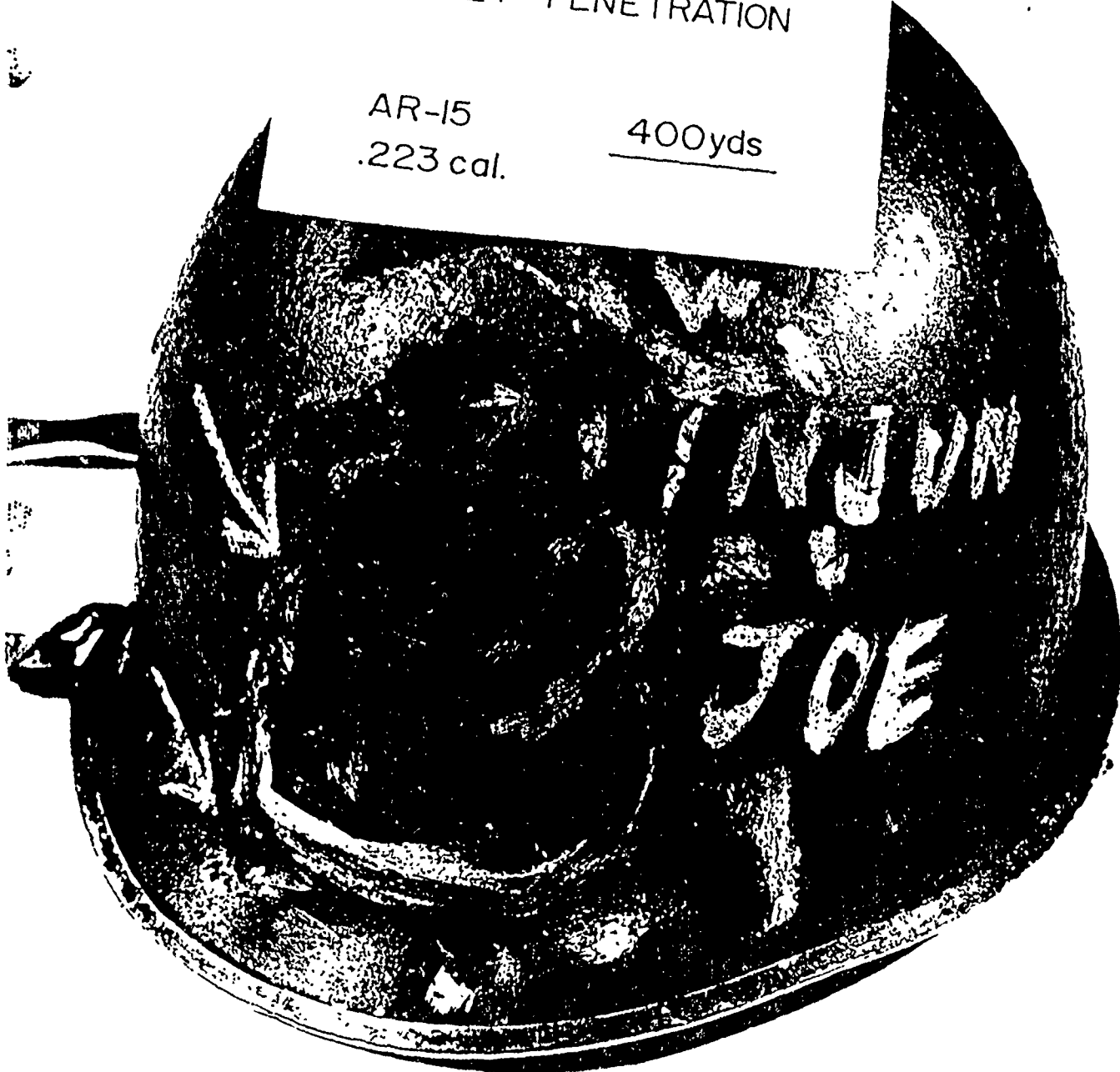
AR-15
.223cal.

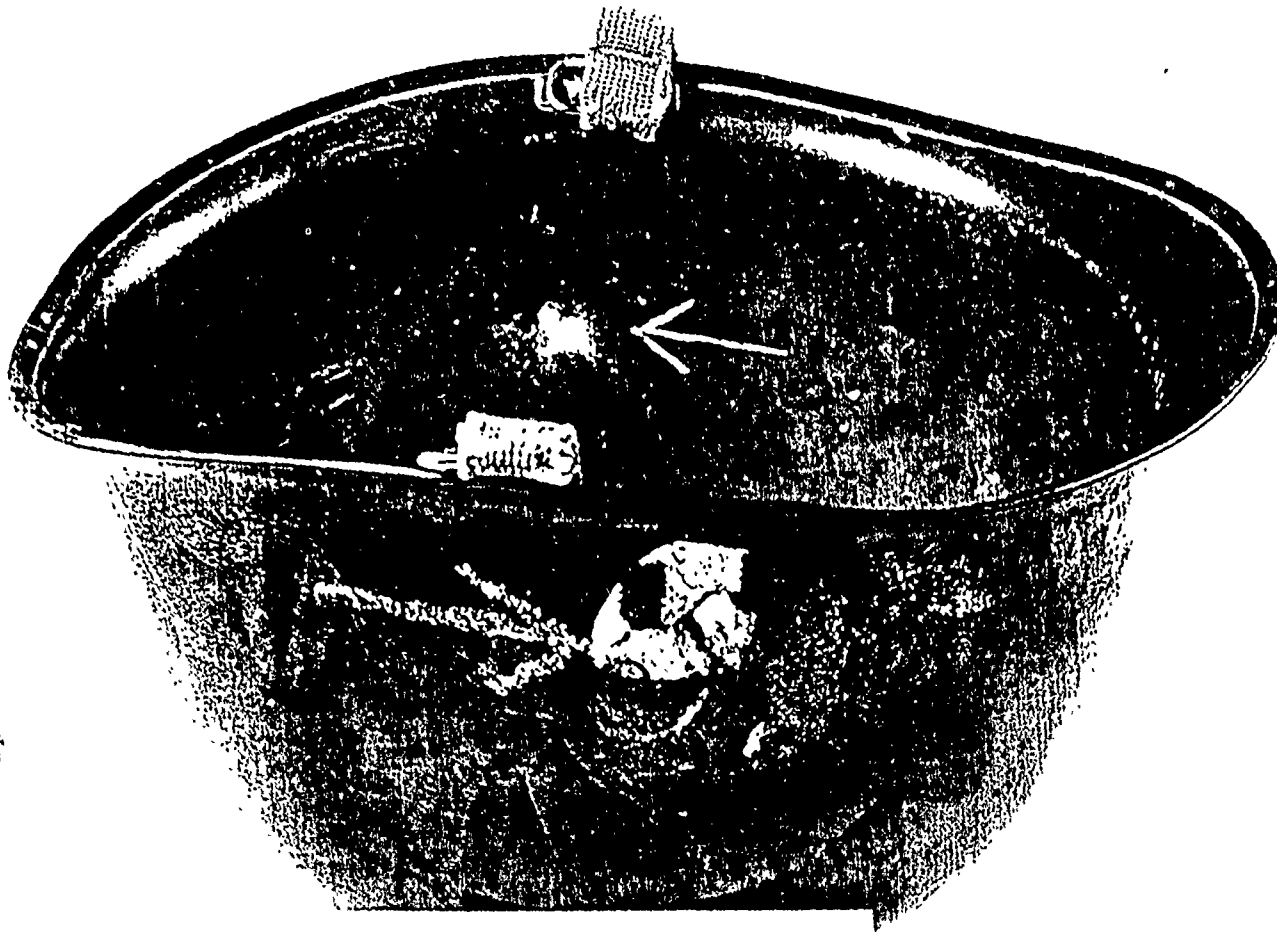
300yds

HELMET PENETRATION

AR-15
.223 cal.

400yds





HELMET PENETRATION

AR-15 600yds
223cal