Report Title: Bibliography of Springfield Armory Technical Reports and Notes on Matériel (1 January 1963 - 31 December 1963)

Approved

STANLEY C. SIEBER
Lt Col, Ordnance Corps
Chief, Res and Eng Div

DDC

JUN 1 2 1964

DDC-IRA B

SWESP Form 722
Rev. 10 Jun 63

Approved
STANLEY C. KEIBER
Lt Col, Ord Corps
Chief, Res and Eng Div


Distribution of this bibliography is not limited. Initial distribution has been made in accordance with the attached list. Requests for additional copies of this bibliography or of technical reports listed in this bibliography should be addressed to Defense Documentation Center, Cameron Station, Alexandria, Virginia.

This bibliography does not contain any proprietary or patentable material, copyrighted and/or copyrightable material, trade marks, or trade names.
The findings in this report are not to be construed as an official Department of the Army position.

DDC AVAILABILITY NOTICE. Qualified requesters may obtain copies of this report from Defense Documentation Center, Cameron Station, Alexandria, Virginia
ABSTRACT

This bibliography is a compilation of Technical Reports and Notes on Materiel prepared and published by Springfield Armory Research and Engineering Division. This bibliography covers the period from 1 January 1963 to 31 December 1963. Abstracts of Technical Reports are included in this bibliography.
FOREWORD

This bibliography contains Springfield Armory Technical Reports, Notes on Materiel, and a Brochure published from 1 January 1963 to 31 December 1963.

Initial distribution of these reports has been made by Springfield Armory.


Reports published from 1 July 1959 to 31 December 1960 are listed in SA-TR20-9101 dated 16 February 1961.

Reports published from 1 January 1948 to 30 June 1959 are listed in SA-TR20-9100 dated 30 September 1959.
<table>
<thead>
<tr>
<th>Symbol</th>
<th>Identification</th>
</tr>
</thead>
<tbody>
<tr>
<td>NM</td>
<td>Notes on Materiel</td>
</tr>
<tr>
<td>TR</td>
<td>Technical Reports</td>
</tr>
<tr>
<td>NUMBER</td>
<td>TYPE</td>
</tr>
<tr>
<td>--------</td>
<td>------</td>
</tr>
<tr>
<td>1-7021</td>
<td>TR</td>
</tr>
</tbody>
</table>
ABSTRACT: The results of a functional test of the integral powder-gas drive for the 20mm M61 Automatic Gun are discussed. The rate of acceleration of the M61 gun with the powder-gas drive compares favorably with the rate of acceleration with the electric and hydraulic drives after the first round is fired. The rate of fire in 100-round burst is not adversely affected by the heat added to the gun by the powder-gas drive. Additional testing to determine the relative reliability of the new design of the bolt and modification of the drive cylinder to eliminate mutilation were recommended.


ABSTRACT: An investigation was made to obtain data concerning the heat resistance of the M14 fiber glass reinforced plastic handguards. These handguards had various modifications of the inner surface. Test procedure is described, and results discussed. Handguards with fiber glass reinforced plastic polyester construction are superior to wood with regard to heat resistance. No difference was shown in the heat resistance of the various polyester type fiber glass reinforced plastic constructions tested. It was recommended that further investigation be made to improve the heat resistance of the M14 fiber glass reinforced plastic handguard.

11-2633 TR REPAIR OF FIBER GLASS REINFORCED PLASTIC STOCKS FOR THE M14 RIFLE, J. Szanto, 7 Jan 63. Unclassified report. Limited distribution. (For Official Use Only.)

ABSTRACT: A kit was developed for the repair of damaged fiber glass reinforced plastic stocks for the M14 rifle. The reparability, the materials, the equipment, and the procedure are given for various types of damage. The adhesive kit can be used in the repair of plastics with the exception of fluorocarbons and polyethylenes. This kit can also be used for plastic-metal and for metal-metal joining. The aerosol spray kit can be used for spraying or for atomizing fluids as required.

ABSTRACT: Polyethylene Glycerol E600 impregnated M14 gunstocks were compared with standard M14 gunstocks for ease of machinability, effect on corrosion of steel in contact with polyglycol, weight differences, dimensional stability, durability under sustained fire, and firing accuracy under varied conditions. The treated gunstocks (1) exhibited better dimensional stability toward moisture than the standard M14 gunstocks, (2) could be cut just as easily in machining, but were heavier and more costly to sand, (3) gained more weight in humid conditions, and (4) did not appear to stand up as well under sustained fire. These treated stocks were not statistically superior in firing tests. Procedure is given and results discussed.


ABSTRACT: Fiber glass reinforced plastic stocks were compared with wood stocks for weatherability. Five walnut and five birch stocks were tested at the NRL Tropical Exposure Site, Canal Zone, together with five plastic stocks of the latest design. The effect of heat, humidity, and mildew under tropical wet conditions was determined from these tests. The damaging effect caused by chewing or biting or boring insects, vermin, rodents, and other forms of life indigenous to the area was also determined from these tests. Fiber glass reinforced plastic stocks successfully withstood the one-year exposure to tropical environment. Procedure is described and results discussed.

ABSTRACT: This report describes in detail the procedure used in production hard-chromium-plating of the 7.62mm rifle, M14, barrel. Tool marks, torn lands, and other irregularities not consistent with good machining practices result in an unsatisfactory chromium plate. Results of this procedure are given.

ABSTRACT: This report summarizes results of investigations made to determine the feasibility of using powdered metal fabrication processes in the manufacture of components for small arms weapons. Inconsistent length of service life of components indicated the need of nondestructive testing procedures for quality control of powdered metal parts. (These procedures are being investigated.) Excellent physical properties were obtained with hot-coining techniques. Mechanical properties determined on a test bar heat-treated to Rockwell C36 were: Tensile strength, 207,300 p.s.i.; yield strength, 200,000 p.s.i.; elongation in 1 inch, 7.8 per cent; reduction of area, 29.2 per cent; density, 99.5 per cent of maximum. Procedure is given, and results discussed.

ABSTRACT: An investigation was made to evaluate the suitability of using various submethods with volatile-corrosion-inhibitor-treated materials in the packaging of small arms components. Packages were stored under two conditions: (1) in an outdoor shed to simulate minimum warehouse storage and
(2) in a static humidity cabinet to simulate tropic storage. Heat-sealable polyester film with volatile-corrosion-inhibitor innerwrap provided satisfactory protection in the humidity cabinet for one year. Results of this investigation indicate that packaging submethods other than those specified in MIL-I-8574 can be satisfactorily used with VCI preservatives. Test procedures are described and results given.

<table>
<thead>
<tr>
<th>NUMBER</th>
<th>TYPE</th>
<th>TITLE</th>
</tr>
</thead>
</table>
ABSTRACT: A study was made to determine the effect of the 20mm weapon system on the HU-1B helicopter. Four 20mm weapons were evaluated from various aspects to determine the most suitable weapon from the point of view of function, safety, and availability. Fixed (elevation only) systems and flexible (elevation and azimuth) systems located at several positions on the helicopter were investigated. Comparisons were made between the 20mm weapons and the 40mm XM75 weapon from the standpoint of aircraft control to show the difference between a lightweight, low-impulse system (40mm XM75) and a heavy, high-impulse system (20mm). The effect of pitch, yaw, roll, and rearward and sideward propulsion was established by calculations. Results show that the M39 is the most suitable of the 20mm weapons evaluated. A lightweight, low-impulse 40mm weapon which meets the terminal ballistics requirements would be the most feasible weapon system for the full flex inboard-mounted or the fixed outboard-mounted installations.
DISTRIBUTION

Commanding General
U.S. Army Materiel Command
Bldg. T-7 (Room 817)
Department of the Army
Washington 25, D. C.

Commanding General
U. S. Army Weapons Command
ATTN: AMSWE-RD (2)
   AMSWE-SMM (1)
   AMSWE-RDF3 (1)
   AMSWE-QA (1)
   AMSWE-PP (1)
Rock Island, Illinois

Commanding Officer
Harry Diamond Laboratories
ATTN: AMXDO-TIB
Connecticut Ave. & Van Ness St., N.W.
Washington 25, D. C.

Defense Documentation Center
Cameron Station
Alexandria, Virginia

Commanding Officer
Rock Island Arsenal
ATTN: SWERI-RD
Rock Island, Illinois

Commanding Officer
Watertown Arsenal
ATTN: SMIWT-TX (1)
   AMRA (1)
Watertown, Massachusetts

Commanding Officer
Watervliet Arsenal
ATTN: SWEWV-RD
Watervliet, New York
REPORT
SA-TR20-9103

DISTRIBUTION - Continued

Commanding General
U. S. Army Test and Evaluation Command
ATTN: Technical Library, Bldg 313 (2)
    Director of Infantry Materiel Testing (2)
Aberdeen Proving Ground, Maryland

Commanding Officer
U. S. Army Ordnance Training Command
ATTN: ORDHB-CR-C
Aberdeen Proving Ground, Maryland

Commandant
U.S. Army Ordnance School
ATTN: USAOS Technical Library (1)
    Non-Resident Training Division (1)
Aberdeen Proving Ground, Maryland

President, U. S. Army Infantry Board
United States Continental Army Command
Fort Benning, Georgia

Commanding Officer
Frankford Arsenal
ATTN: SMUFA-FRA (1)
    Pitman-Dunn Laboratory (1)
    Small Arms Division (1)
Philadelphia 37, Pennsylvania

Commanding Officer
Picatinny Arsenal
ATTN: SMUPA
Dover, New Jersey

Commanding Officer
Detroit Arsenal
ATTN: SMOTX-ECR (1)
    SMOTX-ECM (1)
    SMOTX-RD

Commanding General
Redstone Arsenal
Huntsville, Alabama

Copies
4
1
2
1
3
1
3
1
DISTRIBUTION - Continued

Commanding General
U. S. Continental Army Command
ATTN: ATDEV-3
Fort Monroe, Virginia

President, U. S. Army Air Defense Board
U. S. Continental Army Command
Fort Bliss
El Paso, Texas

Commanding General
U. S. Army Mobility Command
28251 Van Dyke Ave.
Center Line, Michigan

President, U. S. Army Armor Board
U. S. Continental Army Command
Fort Knox, Kentucky

Commanding General
Ammunition and Procurement Supply Agency
ATTN: SMUAP
Joliet, Illinois

Commanding General
U. S. Army Munitions Command
Picatinny Arsenal
Dover, New Jersey

Commanding Officer
Transportation Research Engineering Command
ATTN: Aircraft Dev and Eng
Fort Eustis, Virginia

Commanding General
U. S. Army Tank Automotive Command
ATTN: SMOTA-WS
28251 Van Dyke Ave.
Centerline, Michigan

President
U. S. Army Arctic Test Board
APO 733
Seattle, Washington

Copies

1
1
3
1
1
1
1
1
1
1
DISTRIBUTION - Continued

Commanding General
Army Materiel Command
Bldg T-7 (Room 817)
Department of the Army
ATTN: Detachment No. 6 (TRANS)
Washington 25, D. C.

Commanding General
U. S. Army Aviation
ATTN: Combat Development Office (1)
    AWC Liaison Office (1)
Fort Rucker, Alabama

Commanding Officer
U. S. Army Ordnance Technical Intelligence Office
ATTN: ORDBG-OTI
Aberdeen Proving Ground, Maryland

Commander
Air Materiel Command
ATTN: ASWVAF
Wright-Patterson Air Force Base, Ohio

Commanding Officer
ATTN: ARDC Liaison Office, Bldg 305
Aberdeen Proving Ground, Maryland

Commander
Air Proving Ground Center
ATTN: PGTRI, Technical Laboratory
Eglin Air Force Base, Florida

Chief, Bureau of Naval Weapons
Department of the Navy
ATTN: RRMA,RRE
Washington 25, D. C.

Commanding Officer
Naval Proving Ground
Dahlgren, Virginia
DISTRIBUTION - Continued

Commanding Officer
Bureau of Naval Weapons Technical Liaison Office
ATTN: Navy Liaison Office, Bldg 305
Aberdeen Proving Ground, Maryland

U. S. Naval Ordnance Test Station
Engineering Evaluation Branch
ATTN: Code 5516, Room 130, M Lab
China Lake California

Commandant
U. S. Marine Corps
ATTN: Division of Plans and Policies
Washington 25, D. C.
ABSTRACT


Unclassified report.

Nonlimited distribution.

This bibliography is a compilation of Technical Reports and Notes on Material prepared and published by Springfield Armory Research and Engineering Division. This bibliography covers the period from 1 January 1963 to 31 December 1963. Abstracts of Technical Reports are included in this bibliography.

1. Bibliography
2. Springfield Armory Bibliography
3. Abstracts
4. Springfield Armory Abstracts