

il.

CLASSIFIED-CONFIDENTIAL

Copies to:

D. F. Carpenter	C. W. Weaver
W. U. Reisinger	H. B. Dorr
C. B. Wells	*J. H. Chasmar
M. R. Warden	R. T. Van Ness
A. J. Greene	L. A. Burrows
W. L. Clay	
W. F. H. Mattlage	1 (W. E. Lawson
H. N. Meixner	(S. C. Lloyd
J. M. K. Abbott	

*To be returned

REMINGTON ARMS COMPANY, INC.
Bridgeport, Connecticut

ACTIVITIES OF TECHNICAL DEPARTMENT

THIRD QUARTER, 1945

Submitted by:

R. E. Evans	- Manager, Ammunition Division
G. R. McCormick	- Manager, Arms Division
J. K. Hamil	- Manager, Mechanical Development Laboratory
E. L. Wemple	- Manager, Development Division

Approved by:

G. O. Clifford

G. O. Clifford
Technical Director

This document contains information affecting the national defense of the United States within the meaning of the Espionage Act, 50 U.S.C. 51 and 52, as amended. Its transmission or the revelation of its contents in any manner to an unauthorized person is prohibited by law.

CLASSIFIED-CONFIDENTIAL

C O N T E N T SAMMUNITION DIVISIONPageResearch SectionChemical & Metallurgical Unit:

All Metal Shot Shell, .410 Gauge.....	1
Piston Plus.....	2
Improved High Velocity .22 Cartridges.....	3
New Crimp Binder.....	5
High Velocity New Crimp	6
Caliber .50 Aluminum Case.....	6
Caliber .60 Aluminum Case.....	8
Investigation of Limestone-Clay Target	
Dope.....	8
Investigation of Limestone Targets.....	9
Constriction Length Method of Choke	
Boring.....	9
Investigation of Paper Shot Shell	
Characteristics	10
Study of Fracture Surfaces	11
Torpedo Igniter.....	12

Physics and Ballistics Unit:

Modification of Time Pressure Curves.....	13
Photographic Examination of Intersecting	
Headwaves.....	14
Technique of Design and Calibration of	
Quartz Pieze Pressure Gauges.....	14

Explosives Unit:

Explosives Control Activities, Lake City	
Ordnance Plant.....	15
Explosives Control Activities, Denver	
Ordnance Plant.....	16
Assistance to Bridgeport Plant on	
Explosives.....	17
Improved Rim Fire Priming Mixture.....	17
Electrical Ignition, Caliber .60.....	18
20 mm Electric Bolt.....	18
Electric Primer, T44.....	19
Improvement of Center-Fire Priming Mixtures...	20
Adaptation of Non-Corrosive, Non-Mercuric	
Priming Mixtures to Center Fire Line.....	21
Adaptation of Non-Corrosive, Non-Mercuric	
Primers to Shot Shell.....	22

Intelligence Unit.....23

Engineering SectionProduct Development Unit

Caliber .30 A.P.I.	23
.22 Gallery Spatterless Bullet.....	24
All Metal Shot Shell (12 Gauge).....	24

Ballistic Standardization Unit

Ballistic Standardization.....	25
General Ballistic Test Work.....	27

ARMS DIVISION

Model 721, Bolt Action High Power Rifle.....	28
Model 760, Slide Action Center Fire Rifle.....	29
Model 740, Autoloading High Power Rifle.....	29
Model 851, Autoloading Shotgun.....	30
Model 550, Autoloading Rim Fire Rifle - Improvement to Functioning.....	30
Model 552 Tubular and Model 540 Box Magazine..	31
Lower Cost Single Shot .22 Caliber Rifle.....	31
New Type Cement Kiln Gun.....	32
Modification of U.S. Rifle M/1 (Paratrooper's)	33
Sabot Projectiles.....	33
.30 and .50 Caliber Machine Gun Barrels.....	34
Commercial Draw Rifling.....	35
Rite Flite Trap and Magnetic Release Rite Flite Trap.....	35
Induction Heating Equipment.....	36
Cold Test Equipment.....	36
Surface Peening.....	37
Mann Barrel Equipment.....	37
Cutting Oil Cooling and Filtration.....	38
Study of Free-Machining Materials.....	38
High Speed Carbide Milling.....	38
Precision Casting Process.....	39
Low Cost Finishing Methods.....	40
Technical Assistance to Plant.....	40
Technical Assistance to Plant - Current Arms Models.....	40

MECHANICAL DEVELOPMENT LABORATORY

General.....	41
--------------	----

BridgeportShot Shell Area

Page

Shot Shell Head Manufacture.....	41
Paper Tube Process Improvements.....	42
Parallel Tube Drawing.....	42
Progressive Dieing Machine--Shot Shell Battery Cups.....	43
Combined Shot Shell Assembly Machine.....	44
Shot Shell Loading Machine.....	44
Shot Shell Packing Machine.....	45
Primer Machine Development Survey.....	46
Laboratory Primer Mixture Mixer	46

Rim Fire Area

Rim Fire Machine Development Survey.....	47
Caliber .22 Long Rifle Dominion Wheel.....	47
Rim Fire Shell Manufacturing Machine.....	48
Caliber .22 Primer Mixture Charger.....	49
Automatic .22 Caliber Rim Fire Loading and Finishing Machine.....	49
Rim Fire Lubricating Machine.....	50
Rim Fire Cartridge Visual Inspection.....	51
Caliber .22 Case Wall Variation Gauge.....	51

Center Fire Area

Improved Head Turn Machine.....	51
Center Fire Loading.....	52
Universal Center Fire Ammunition Test Loader.....	53
Shell Feed & Varnishing Unit.....	53

Ilion

Wood Shop Studies.....	54
Model 11 Shotgun Stock Checkering Machine..	54
Barrel Machine Studies.....	55
Material Components - Machine Study.....	55
Stock Machining Equipment.....	55
FX-I-6.....	56

Findlay

Improvements to Target Manufacturing Equipment.....	57
--	----

DEVELOPMENT DIVISION

Consumer Questionnaire on Gun Design.....	57
Development of Wing Shooting Games.....	58
Gun Stock Design Study.....	58
Consumer Questionnaire on Sporting Ammunition	58
Miscellaneous.....	58

PROGRESS REPORTS SUBMITTEDLIBRARY ACCESSIONS - THIRD QUARTER, 1945

ARMS DIVISION, G. R. MC CORMICK, MANAGERProject: Model 721, Bolt Action High Power Rifle - FTS-3483Personnel: M. H. Walker, Design Section; M. H. Smith, A. Travostino, S. H. Quist, L. F. Mitchell, P. F. HenriksenAuthorized Amount: \$71,000 Total Expended to Date: \$40,847Nature of Problem:

Development of a low cost high power rifle to take the place of the present Model 720.

Summary of Progress from Inception:

A design was conceived and built in which the objective of simple parts was met very successfully. Twenty-three of the fifty parts are blank and form operations or springs which can be furnished by vendors specializing in this field. Basic process records have been written for the remaining twenty-seven parts, which are being reviewed by a committee representing Design, Tool Design, Estimating, and Production Engineering of the Technical Department. In processing the gun, operations little used at Ilion, such as internal broaching, rise and fall milling, induction brazing, swage rifling, and automatic machine finishing of barrels, are planned. The recommendations of the Arms Study Processing Report are being given careful consideration.

This Quarter's Work:

Work on the .30-06 head size extractor has been completed except for a function test, which will be completed along with the additional calibers. The new extractor will lift approximately twice the load of the old claw type extractor (about 300 pounds, the load at which the case rim shears). 30,000 operations on the equivalent of a steel case rim failed to wear the extractor appreciably or to affect its function. Barrels for the additional calibers are ready and will be assembled to the actions as soon as bolt heads for the new extractor are installed. The stock design has not, as yet, been approved by the Arms Products Committee. Two stocks according to the latest specifications are being fabricated and probably will be submitted to the Arms Products Committee before October 1.

With the closing of military work, personnel became available about the middle of August for further work on processing the 721. The process for the stock is ready to start tool design. Proposals are being received on machines for manufacture of the barrel and receiver. Vendors are being sought for manufacture of purchased parts.

Proposed Next Quarter's Work:

Complete and secure approval of Products Committee on stocks. Complete and test .300 magnum extractor. Make tests with defective ammunition and install new barrels for functional testing for 30-06, .270, and .257 calibers.

Complete processing all parts. Procure samples of purchased parts. Start tool design. Procure some machine tools for Pilot Shop.

Project: Model 760 Slide Action Center Fire Rifle - FTS-3484
Personnel: J. D. Howell, C. C. Orloff, H. W. Young
Authorized Amount: \$182,400 Total Expended to Date: \$99,182

Nature of Problem:

Design a high power slide action rifle capable of handling a munition more powerful than any previously handled in slide action rifles and yet weighing less and costing less to produce than our present medium power slide action center fire rifle.

Summary of Progress from Inception:

A model was constructed in .30-06 caliber and tested for 3000 rounds. Tests indicated a breakdown of certain sliding surfaces; so the bolt operating mechanism was revised to correct this. The lines of the gun were changed to give a smoother appearance, and a polished alumilite surface for the receiver and trigger plate were decided upon. The weight is satisfactory, and the cost, though higher than desired, is lower than for the present line. A new receiver was precision cast and machined to the new inside dimensions but to the old contour, and testing was started. The difficulties encountered with the extractor were overcome.

This Quarter's Work:

Preliminary firing showed battering from the action bar lock on the end of the action bar. Though the parts in question were not heat treated, the condition was considered undesirable; so, after some experiments, a solution eliminating it has been worked out. Trouble was also experienced with battering of the front and rear magazine plates from recoil of the cartridges. Work is now in progress to eliminate this. Trigger plate casting drawings have been completed and are being checked. Processing has started on other parts.

Proposed Next Quarter's Work:

Continue processing. Complete tests on precision cast receiver model and start tests on die cast receivers when available. Complete checking on all drawings.

Project: Model 740, Autoloading High Power Rifle - FL-3122
Personnel: H. W. Young
Authorized Amount: \$48,100 Total Expended to Date: \$17,813

Nature of Problem:

Design autoloading means which could be applied to the Model 760 with a maximum number of parts common to both models.

and trigger has been made, including improvement in the basic design through the elimination of looseness in the head at the cocked position.

This Quarter's Work:

Some new parts were made up, and a model was assembled and demonstrated to various members of the Sales Department at the Lordship Club in Bridgeport. A revised project has been submitted to cover the remaining work.

Proposed Next Quarter's Work:

A report will be prepared to show comparison of Rite Flite Traps with similar models by competitors. This has been requested for the purpose of making a sales forecast.

Project: Induction Heating Equipment - TP 3403-9

Personnel: C. F. Benner

Authorized Amount: \$500 Total Expended to Date: \$315

Nature of Problem:

To procure new induction heating equipment and dispose of old equipment.

Summary of Progress from Inception:

A project was submitted and approved for a 30 KW. Unit; and the unit has been ordered, delivered, and installed.

This Quarter's Work:

Included above.

Proposed Next Quarter's Work:

Place the new machine in operation and, after gaining experience in its use, set up production work on the machine.

Project: Cold Test Equipment - TP-3403-11

Personnel: H. C. Moss

Authorized Amount: \$300 Total Expended to Date: \$322

Summary of Progress from Inception:

A perspective drawing was made and a supplier contacted for a quotation on equipment.

This Quarter's Work:

A project to purchase equipment was written and circulated.

Proposed Next Quarter's Work:

None