

J.A. Roberts
RAM Control - Ilion

FD 1366-REV.

REMINGTON ARMS COMPANY, INC.

APPROPRIATION REQUEST

Department Technical

Works Ilion

Project No. FD-721

Request for \$17,170 Reduction

Part III
Date 4/13/48

Category Established Product

Title MODEL 721-722 BOLT ACTION HIGH POWER CENTER FIRE RIFLE

Parts I & II - Previously Authorized - \$1,113,170.
Part III - This Request - (17,170.) Reduction
\$1,096,000.

This project is included
in Forecast No. 2 in
the amount of \$79,790.

To be commenced Upon Approval

To be ready for use

To be physically completed Sept. 1948

Estimate prepared by

K. C. Gilmore

4/12/48
Date

Approved as to form, accounting
aspects, and rules compliance

R. D. Jack

Treasurer or
Assistant Treasurer

4-20-48
Date

		Date
Approved as	H. A. Brown	4-14-48
Authorized	H. K. Faulkner	4-14-48
Approved as	J. M. Christman	4-16-48
Authorized	G. O. Clifford	4-16-48
Approved as	R. E. Coleman	4-20-48
Authorized	W. F. H. Mattlage	4-20-48
Approved as	M. R. Warden	4-20-48
Authorized	C. K. Davis	4-22-48
	President and General Manager	
Authorized	BOARD OF DIRECTORS	4-30-48

Preliminary approvals:

Date

Date

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4/13/48



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REMINGTON ARMS COMPANY, INC.

SUMMARY OF ESTIMATED EXPENDITURESPROJECT NO. FD-721 - Ilion WORKS

	<u>Labor</u>	<u>Material</u>	<u>Total</u>
Land	\$ -----	\$ -----	\$ -----
Manufacturing buildings	-----	-----	-----
Manufacturing equipment	-----	401,527	401,527
Power and service facilities	-----	-----	-----
Tooling	94,075	198,800	292,875
Dismantling and rearranging	-----	-----	-----
Product development	401,598	-----	401,598
Machine development	-----	-----	-----
Project administration	-----	-----	-----
Other	-----	-----	-----
	\$ 495,673	\$ 600,327	\$ 1,096,000
Provision for advancing wages and material prices	-----	-----	-----
TOTAL	\$ 495,673	\$ 600,327	\$ 1,096,000

ACCOUNTING DISTRIBUTION OF EXPENDITURES

	<u>Expenditures Previous Parts</u>	<u>Expenditures This Part</u>	<u>Adjusting Entries</u>	<u>Final Net Results in Accounts</u>
Plant increase	\$ 701,402	\$(7,000)Red.	*\$(2,935.48)	\$ 691,466.52
Operations	411,768	(10,170)Red.	-----	401,598.00
Depreciation	-----	-----	* 2,935.48	2,935.48
	\$ 1,113,170	\$(17,170)Red.	-----	\$1,096,000.00

*Write off of five worn obsolete type of machines used for cutter sharpening.
(See schedule in Project FI-172)

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REMINGTON ARMS COMPANY, INC.

GENERAL INFORMATION

PROJECT NO. FD-721 Part III - Ilion Works

INTRODUCTION:

Part II of this project authorized funds in the total amount of \$1,113,170 to complete all work required to place Model 721-722 Rifles in production in eight calibers, including three new Remington calibers as follows:

280 Remington
224 Remington
222 Remington

A review of the program involved in adding these three new Remington cartridges to the ammunition line and providing Model 721 and 722 Rifles to handle them indicated insufficient economic justification for calibers 280 Remington and 224 Remington. Deletion of these two calibers was recommended in a combined meeting of the Arms and Ammunition Product Committees on March 26, 1948.

DESCRIPTION OF PROPOSED WORK:

In conformance with this decision, all work on the development of Model 721 for caliber 280 Remington and Model 722 for caliber 224 Remington has been stopped. Development of Model 722 for caliber 222 Remington, however, will be completed for production.

REMARKS:

A revision in Estimated Earnings and Return on Investment is attached. Net Earnings of \$140,736 are estimated with a return of 11.7%.

The R & M Estimate approved April 1, 1948, included the \$1,113,700 authorized in Part II and this project therefore anticipates an underrun of \$17,170.

4/15/48

Revised 4-16-48
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REMINGTON ARMS COMPANY, INC.

ESTIMATED EARNINGS AND RETURN ON INVESTMENT

Project No. FD-721 Part III - Ilion Works
6 Cal.

CATEGORY: ESTABLISHED PRODUCT

	Normal Year		
	Operation before Project No. FD-721	Operation after Project No. FD-721	Results from Project No. FD-721
Quantity	262,010	274,810	12,800
Outside Sales	\$6,229,197	\$6,618,387	\$ 389,190
Less: Mill cost	\$4,962,070	\$5,107,982	\$ (145,912)
Selling and administrative expense	661,839	661,839	
	\$5,623,909	\$5,769,821	\$ (145,912)
Operative Earnings	\$ 605,288	\$ 848,566	\$ 243,278
Less: All other expense @ 11% (excludes Federal taxes on income)			26,761
Net earnings before Federal taxes on income			\$ 216,517
Less: Federal taxes on income @ 35%			75,781
<u>NET EARNINGS</u>			\$ <u>140,736</u>
<u>INVESTMENT</u>			
Total appropriation request under this project (including development)			\$1,096,000
Less: Amount included therein for manufacturing facilities subject to allocation:			
Equipment	\$ 401,527		694,402
Tooling	292,875		\$ 401,598
Add: Investment in facilities used directly in this operation and applicable service and other manufacturing facilities			819,341
Total investment			\$1,220,939
Working capital			786,724
Total capital required			\$1,607,663
Less: Portion of this project to be charged to operations (including development) or depreciation reserve			401,598
Total investment after completion of this project			\$1,206,065
<u>RETURN ON INVESTMENT</u>			
Total capital required			8.8%
Total investment after completion of this project			10.7%

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REMINGTON ARMS COMPANY, INC.

ESTIMATE OF SAVINGS Present Model vs. Proposed Model

BASED ON NORMAL YEAR

PROJECT NO. FD-721 Part III - Ilion WORKS
6 Cal.

L E K S C H

	<u>Total Line Including</u>		
	<u>Present</u>	<u>Proposed</u>	<u>Difference</u>
	<u>Model</u>	<u>Model</u>	
Quantity	262,010	274,810	12,800
Outside Sales	\$6,229,197	\$6,618,387	\$ 389,190
Factory costs:			
Direct Material	836,874	919,266	(82,392)
Direct Labor	822,043	864,807	(42,764)
Expense:			
Direct and Indirect	2,790,632	2,797,303	(6,671)
Fixed	250,000	250,000	
Inventory adjustment	93,991	96,628	(2,637)
Deferred tooling cost	168,530	179,978	(11,448)
Total factory cost	\$4,962,070	\$5,107,982	\$(145,912)
Selling and administrative expense	661,839	661,839	-----
	<u>\$5,623,909</u>	<u>\$5,769,821</u>	<u>\$(145,912)</u>
Operative earnings	\$ 605,288	\$ 848,566	\$ 243,278
Less: All other expense @ 11%			<u>26,761</u>
Estimated savings before Federal taxes on income			\$ 216,517
Less: Federal taxes on income @ 35%			<u>75,781</u>
Estimated net savings (normal year)			\$ 140,736
Total estimated expenditure, excluding \$250,000 of equipment for other models			\$ 846,000
Net return on expenditure			16.6%
Total estimated expenditure, excluding \$401,527 of equipment*			\$ 694,473
Net return on expenditure			20.3%

*Equipment for general use which would have to be purchased on a necessity basis at a reasonably early date.

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REMINGTON ARMS COMPANY, INC.

DETAIL ESTIMATE OF EXPENDITURES
M/721-722 - Project FD-721 - Part III

	Amount Previously Authorized	Amount Requested This Part	Added Cost To Complete	Total Estimated Cost
<u>DEVELOPMENT (FD-721-1)</u>				
Design				
Investigation	\$ 1,061	\$ -----	\$ -----	\$ 1,061
Design	15,616	-----	-----	15,616
Design Revisions	33,053	(1,003)	-----	32,050
Model Making	18,080	-----	-----	18,080
	\$ 67,810	\$ (1,003)	\$ -----	\$ 66,807
Specifications				
Testing	\$ 20,687	\$ (1,000)	\$ -----	\$ 19,687
Specifications	8,213	-----	-----	8,213
	\$ 28,900	\$ (1,000)	\$ -----	\$ 27,900
Product Engineering				
Process Engineering	\$ 94,700	\$ (1,500)	\$ -----	\$ 93,200
Trial Run	29,950	(1,000)	-----	28,950
	\$ 124,650	\$ (2,500)	\$ -----	\$ 122,150
Tooling Revisions				
Tool Design Revisions	\$ 35,400	\$ -----	\$ -----	\$ 35,400
Tool Revisions	46,935	(935)	-----	46,000
	\$ 82,335	\$ (935)	\$ -----	\$ 81,400
Administrative				
Engineering Files	\$ 6,219	\$ (851)	\$ -----	\$ 5,368
Project Engineering	15,381	(1,381)	-----	14,000
	\$ 21,600	\$ (2,232)	\$ -----	\$ 19,368
<u>TOOLING (FD-721-2)</u>				
Design	\$ 96,075	\$ (3,000)	\$ -----	\$ 93,075
Tools	203,800	4,000	-----	207,800
	\$ 299,875	\$ (7,000)	\$ -----	\$ 292,875
<u>SPECIAL MACHINERY (FD-721-3)</u>				
<u>STANDARD MACHINERY (FD-721-4)</u>				
	374,527	\$ -----	\$ -----	\$ 374,527
<u>PRODUCTION AIDS (FD-721-5)</u>				
	\$ 27,000	\$ -----	\$ -----	\$ 27,000
<u>PILOT OPERATIONS (FD-721-6)</u>				
Quality Audit	\$ 3,230	\$ -----	\$ -----	\$ 3,230
Methods Engineering	1,460	-----	-----	1,460
Machine Changes&Additions	10,060	(3,500)	-----	6,560
Machine Rearrangement	1,900	-----	-----	1,900
Pilot Lot Manufacture	61,823	2,000	-----	63,823
Tool Replacement	8,000	(1,000)	-----	7,000
Credit for O.K. Guns				
	\$ 86,473	\$ (2,500)	\$ -----	\$ 83,973
SUB TOTAL	\$ 411,768	\$ (10,170)	\$ -----	\$ 401,598
CONTINGENCIES				
TOTAL	\$ 1,113,170	\$ (17,170)	\$ -----	\$ 1,096,000

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TECHNICAL DEPARTMENT REQUEST - FINANCIAL CLOSING NOTICE

PLANT - Il150 PROJECT - FD-721
DIVISION - Arms CLOSING DATE - February 21, 1950

TITLE - Model 721-722 Bolt Action High Power Center
Fire Rifles

All work on the subject project having been
completed, the project is to be closed out in its
entirety.

Preliminary Approvals D. H. Harris Technical Dept. Manager
A. H. Harris Engrg. Service Division Supvr.
Dr. Badley Works Accountant
H. I. Paulkner Plant Manager

Approvals J. M. Caldwell Technical Director
V. H. Hoffman Treasurer or Asst. Treasurer
V. H. Hoffman Director of Production
W. R. Edwards Vice President and General Manager

SUMMARY OF EXPENDITURES
PROJECT PD-721

	<u>Expended</u>	<u>Authorized</u>	(OverRun) <u>Underrun</u>
Manufacturing Equipment	398,851.39	401,527.00	2,575.61
Tooling	293,983.90	292,875.00	(1,108.90)
Dismantling & Rearrangement	947.79		(87.79)
Product Development	379,307.17	401,598.00	22,290.83
Other	615.96	-	(615.96)
	<u>1,073,706.21</u>	<u>1,096,000.00</u>	<u>22,293.79</u>
	UnderRun		2.0%

<u>Account</u>	<u>Authorized</u>	<u>Expended</u>	<u>UnderRun</u>
721-1 Development Operations	317,625.00	297,823.74	19,801.26
721-2 Tooling Pl.Incr.*	292,875.00	293,983.90	(1,108.90)
721-4 Standard Machinery Pl.Incr.*	374,527.00	373,742.56	784.44
Depreciation		3.85	(3.85)
721-5 Production Aids Pl.Incr.*	27,000.00	25,108.83	1,891.17
Depreciation		913.94	(913.94)
Operations		615.96	(615.96)
721-6 Pilot Operations Operations	83,973.00	81,483.43	2,489.57
	<u>1,096,000.00</u>	<u>1,073,706.21</u>	<u>22,293.79</u>
			2.0%

*Detail attached.

Cutter Grinder #10956 written off on PIT-RI-461
Cutter Grinder # 8608 written off on PIT-RI-651
Bench Lathes #2266 & #2873 and attachments are required for
present volume of production.

DETAIL OF EXPENDITURES
PROJECT FD-721

	<u>Expended</u>	<u>Authorized</u>	(OverRun) <u>UnderRun</u>
<u>Development</u>			
<u>Design (1)</u>			
Investigation	551.11	1,061.00	509.89
Design	15,143.13	15,516.00	472.87
Design Revisions	33,098.07	32,050.00	(1,048.07)
Model Molding	19,326.69	18,080.00	(1,246.69)
	<u>68,119.00</u>	<u>66,807.00</u>	<u>(1,312.00)</u>
<u>Specifications</u>			
Testing	19,785.11	19,687.00	(98.11)
Specifications	9,510.95	8,213.00	(1,303.95)
	<u>29,302.07</u>	<u>27,900.00</u>	<u>(1,402.07)</u>
<u>Product Engineering</u>			
Process Engineering	87,326.86	93,200.00	5,873.14
Trial Run	24,382.26	28,950.00	4,567.74
	<u>111,709.12</u>	<u>122,150.00</u>	<u>10,440.88</u>
<u>Tooling Revisions</u>			
Tool Design Revisions	33,864.43	35,400.00	1,535.57
Tool Revisions	36,953.40	46,000.00	9,046.60
	<u>70,817.83</u>	<u>81,400.00</u>	<u>10,582.17</u>
<u>Administrative</u>			
Engineering Files	5,367.79	5,368.00	.21
Project Engineering	12,507.93	14,000.00	1,492.07
	<u>17,875.72</u>	<u>19,368.00</u>	<u>1,492.28</u>
<u>Tooling (2)</u>			
Design	89,110.39	93,075.00	3,964.61
Tools	204,873.51	199,800.00	(5,073.51)
	<u>293,983.90</u>	<u>292,875.00</u>	<u>(1,108.90)</u>
<u>Special Machinery (3)</u>	-	-	-
<u>Standard Machinery (4)</u>	373,746.41	374,527.00	780.59
<u>Production Aids (5)</u>	26,668.73	27,000.00	331.27
<u>Pilot Operations (6)</u>			
Quality Audit	2,329.81	3,230.00	400.19
Methods Engineering	1,210.27	1,460.00	249.73
Mach. Changes & Additions	5,083.58	5,560.00	476.42
Mach. Rearrangement	2,189.37	1,900.00	(289.37)
Pilot Lot Mfg.	64,740.53	53,823.00	(10,917.53)
Tool Replacement	4,705.07	7,000.00	2,294.93
Credit for OK Guns	(275.35)	-	275.35
	<u>81,483.43</u>	<u>83,073.00</u>	<u>1,589.57</u>
Sub Total (1-6)	<u>390,377.17</u>	<u>411,598.00</u>	<u>22,220.83</u>
Total	1,073,706.21	1,096,000.00	22,293.79

PLANT INCREASE DETAIL
PROJECT FD-721

721-2 Tooling

Design
Tools

\$ 89,110.39
204,873.51

\$ 293,983.90

721-4 Standard Machinery

<u>Inv.No.</u>	<u>W.O.No.</u>	<u>Description</u>	
12184	80704	Dennison Press	1,159.49
11869	80705	Drill Sharpener	1,450.85
12413		Install. Charges	85.84
12366	80707	Lathe	1,768.45
12367		Motor	35.00
11875	80710	J&L Lathe	8,032.14
11890 &)		Motors	290.00
12376			
22024	80712	Lathe	2,763.52
11884	80714	Cincinnati Grinder	3,601.75
12150 &)		Motors	105.00
12151			
12401	80716	LaPointe Broach	5,334.69
12438		Motor	130.00
12193	80717	Porter Cable Sander	1,301.97
12418		Motor	78.06
11878	80719	Landis Grinder	6,454.25
11996 &)		Motors	170.00
11997			
12302	80725	Sellers Grinder	457.75
11877	80726	Lipe Lathe	2,904.06
11995		Motor	110.00
12369	80727	Lipe Lathe	3,206.96
12373		Motor	112.00
12370	80728	Lipe Lathe	2,861.68
12374		Motor	112.00
12371	80729	Lipe Lathe	2,818.03
12375		Motor	112.00
12446	80733	Cincinnati Miller	3,006.48
12445	80734	Cincinnati Miller	2,777.65
22013		Motor	25.00
12379	80735	Cincinnati Miller	5,622.91
12386 &)		Motors	95.06
22007			
12404	80736	Thread Miller	4,627.38
12423		Motor	35.00
12308	80737	Delta Motor	27.60
12307	80738	Delta Drill Press	73.80
12320	80739	Dip Tank	89.10
12380	80741	Cincinnati Miller	3,783.20
12387		Motor	64.08
11876	80744	Screw Machine	5,444.79
12302	80745	Sellers Gr. Cabinet	76.09
12382	80763	Screw Machine	13,171.82
12419		Motor	293.00
12439	80900	LaPointe Broach	5,760.63
12440		Motor	220.00

PLANT INCREASE DETAIL
PROJECT FD-721

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721-# Standard Machinery Continued

Inv No.	W.O.No.	Description	
12378	80901	Cincinnati Miller	6,471.73
12385		Motor	82.72
12402	80902	Cincinnati Miller	2,895.06
12462	81409	Base for Tocco Brazier	333.01
12479	81502	Cincinnati Miller	5,360.03
12480 &)		Motors	75.00
12481)			
11876	81508	Pulley Shafts for	32.70
		Screw Machine	
12342	81511	Modern Bond Shavers	217.38
12343		(2)	217.39
12368 &)		Motors	30.00
12372)			30.00
6235-6-)	81516	Lyons Tool Toters	45.85
7-8)			
12470	81517	Cincinnati Profiler	15,706.29
12471-2-)	81517	Motors	170.00
3-4)			
12394	81519	Barnes Driller	40,365.04
22636-7-)		Motors	1,886.60
8-9-40)			
41-2-3-)			
4-22703)			
22645		Motor	465.00
12396	81520	Barnes Reamer	41,052.53
22167-8-)		Motors	1,114.00
9-70)			
22174	81521	Kingsbury Miller	10,026.78
12384	81523	Lipe Lathe	1,889.01
12389		Motor	99.63
11878	81528)	Parts for Landis	201.93
	81529)	Grinder	1,405.03
12383	81532	Drill Press, 2 Spdl.	2,055.87
12415	81533	" " , 3 Spdl.	4,652.82
12414	81534	" " , 3 Spdl.	2,571.35
12476	81535	Cincinnati Miller	6,637.27
12477 &)		Motors	158.00
12478)			
12441	81542	Chucking Machine	25,888.65
12442-3)		Motors	358.00
-4)			
12361	81544	Carboloy Grinder	1,430.35
12453	81545	LaPointe Broach	3,742.79
12454 &)		Motors	43.00
12455)			
22037	81546	Surface Grinder	3,658.49
22079-80-)		Motors	335.00
81-82)			
12492	81549	Gorton Engraver	1,351.49

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PLANT INCREASE DETAIL
PROJECT PD-721

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721-4 Standard Machinery Continued

<u>Inv.No.</u>	<u>W.O.No.</u>	<u>Description</u>	
12489)	81557	Screw Machines	13,330.42
22093)			
22334)			
22385 & 6)		Motors	260.00
22094-5)			
12381	81558	Cincinnati Grinder	33,613.88
12388		Motors	759.00
12398			
12447-8)			
-9)			
12484	81559	Marking Machine	3,155.87
23538	81560	Steel Shelving	220.12
11878	81575	Water Nozzle for Landis Grinder	38.91
22058	81577	Logan Assembly Machine	3,528.02
22059		Motor	90.00
12439)	81579	Attach. for Screw Machines	2,965.00
22334)			
22093)			
22700)			
11876	81584	Parts for Screw Mach.	14.73
12382	81586	Feed Gears - Screw Machine	80.97
12371)			
11877	81537	Switches for Carbo Lathes (4)	357.13
12369)			
12370)			
12371)			
12397	81593	Hoffman Filter	1,563.60
12398 &)		Motors	128.00
12399)			
11875	81595	Concrete Pad for Lathe	665.58
12460	81596	Conversion of Dbl. End Countersinking Machine to 2 D/Ps #23929 & 23930	2,457.71
22015 &)		Motors	110.00
22017)			
11878	81602	Grinder Parts	379.52
12414)	81603	Parts for Drill Presses	108.19
12415)			
12383)			
Various Machines	81607	Design Work	771.21
46-1	81608	" "	1,002.48
22047	81610	Final Assen Reamer	653.25
22523		Motor	27.00
21375	81612	Bar Feed	207.30
12453	81617	Inst. Broach	229.13
12132	81618	Inst. Comparator	71.88
12451	81628	Coolant Lines on Broach	35.71

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PLANT INCREASE DETAIL
PROJECT PD-721

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721-4 Standard Machinery Continued

<u>Inv. No.</u>	<u>W.O. No.</u>	<u>Description</u>	
12389	81629	Parts for Motors	23.63
22563	81631	E-C Sander	394.63
12493	81632	Trolley	81.48
22711		Hoist	115.67
12379-80	81637	Blow Guns on Cinn.	45.40
12445-6		Millers	
12462	90220	Tocco Brazier	11,870.18
-	90252	Cuprodine System	1,949.58
-	90253	Cuprodine piping	1,215.29
12330	90254	Cuprodine Tanks	710.00
22600-1-			
2-3-4			
22605			
-		Cuprodine Piping	427.79
-	90257	Cuprodine Design	656.98
-	91201	Design - tempering	219.06
12382	91202	Oil Filter-Scr. Mach.	66.10
12453	91203	Magnetic Chuck	272.75
	91204	Arbor Support for Cincinnati Miller	80.64
22046	91205	Hoist Assembly	850.66
22607	91205	Hoist Assembly	209.00
12379-12402)	91206	Trip dogs on 12 machines	103.93
12378-12380)			
12445-12446)			
22025-12476)			
12479-22029)			
22632-22042)			
23492	91208	Hot Oil Tempering Bath	127.87
22052	91209	Gorton Grinder	770.28
22053		Motor	25.00
22562	91210	Sellers Grinder	164.73
22583		Motor	80.00
22026	91211	Tap Grinder	600.41
23492	91212	6 Oil Heaters for Tempering Bath	120.85
12441	91213	Centering Device	600.78
22090	91214	Roto-Clone	266.41
22091		Motor	40.00
22034	91215	Sellers Grinder	335.10
22134		Motor	22.00
22355	91216	Hob Sharpener	3,934.38
22357-6		Motor	107.00
11875	91217	Slide Support	154.41
12396	91222	Install Reamer	1,367.42
12402	91223	Time Delay for Cincinnati Miller	265.00
12394)	91224	Engrg. Design and Layout for Barnes Drillers	721.18
12416)			
22527)			

PLANT INCREASE DETAIL
PROJECT PD-721

-5-

721-4 Standard Machinery Continued

<u>Inv. No.</u>	<u>W.O. No.</u>	<u>Description</u>		
22750	91225	Surface Grinder	1,699	58
22038	92803	Router	1,140	78
22618		Freq. Changer	374	86
-	92806	Exhaust pipe for above	1	74
				\$ 373,742.56

721-5 Production Aids

23551)	81888	2 Barrel Racks	420	91
23552)				
-	81256	Browning Racks (8)	1,249	55
12429	81566	Comparator	2,867	27
12408	90118	Comparator	3,232	48
-	90131	4 Assembly trays	47	87
-	90148	Benches 46-1	403	57
6243t-6282	90149	Rack Conveyors (40)	3,342	57
-		400 Metal Trays	3,052	53
23537	90150	Rack for Steel	189	12
-	90151	35 Steel Trucks	332	10
-	90152	17 Steel Trucks	1,033	03
-	90153	50 Barrel Trucks	478	86
-	90154	Exhaust for Dip Tanks	76	87
-	90155	180 wood bottoms in barrel trays	681	73
-	90156	" " " "	488	14
-	90159	120 Assembly Bins	65	93
-		80 " "	75	23
12405)	90160	Plast-O-Dip tanks	150	58
12406) & 12407			128	70
12461)	90162	Stanley Bench	46	06
12409)		Grinders	46	06
19851	90163	Kardex File	145	06
19129-19067)	90164	Lyons Racks	314	61
-19153)				
6551-2-3	90165	Tool stands	67	98
-	90166	500 Stacking tote pans "B"	1,259	20
23540	90168	Gr. Wheel rack	104	35
23541-2-3-4)	90169	Tool Crib Racks	419	22
5-6-7)				
6219 & 6292	90170	Truck for Compar. Screens	73	47
12408	90171	Rack for Comparator	149	28
-	90173	4 Assembly Trays	29	88
-	90174	4 Assembly Trays	45	50
-	90202	Design & Layout Time for Prod. Aids	813	21
6554-6556	90209	2 Rack Conveyors	180	40
-	90211	Burn-Off Rack	185	40
6293	90213	6-Wheel Truck	39	95

PLANT INCREASE DETAIL
PROJECT PD-721

-6-

721-5 Production Aids Continued

<u>Inv.No.</u>	<u>W.O.No.</u>	<u>Description</u>	
23539	90226	Matching Rack for	80.26
		M721 B.Plates	
12494-5	90236	Wash tanks, etc.	38.75
22051		Floor pan	18.49
-		Exhaust Pipe	178.07
-		Steam & water	261.60
12486		Fan, etc.	130.45
12475	90237	Hoist & Reel	352.72
-	91401	4 Wire Baskets (oil quench)	42.60
-	91402	Lindberg Racks & Baskets (7)	506.31
23541	91403	Arbor Rack	82.93
22596	91404	Move Hoist & Clean	15.73
	91405	Portable Support Truck	105.71
-	91406	Temp. Controller	190.61
-	91407	Blow pipe for brazing	4.41
-	91408	Tray lifting fixture	13.36
12462	91409	Modify Tocco Brazers	115.85
12462	91410	Tocco Valves	12.04
-	91411	Gage Rack	24.17
12441	91412	Tray for Machine #21441	41.47
12382	91413	Chute on Screw Mach	9.96
-	91414	Reamer Rack	18.97
12439	91415	Rack on Broach #12439	12.10
12378 &)	91416	3 Chip baskets for	40.22
12476)		Miller	
-	91417	500 Inv. # Tags on 500 Tote Pans	31.59
6427-6428	91420	2 Stock Trucks	122.23
6487 to 6518	91421	28 Gage Benches -Wood	235.18
-	91422	3 Wash Racks	125.79
		6 Pickling basets	25.108.83

T
2-21-50

151839
AL 0030158

A

REMINGTON ARMS COMPANY, INC.
APPROPRIATION REQUEST

Department

Technical Works Division

Project No.

FD-721

Request for \$

17,170. REDUCTION

Date

PART III

4/13/48

Category

ESTABLISHED PRODUCT

MODEL 721-722 BOLT ACTION HIGH POWER CENTER FIRE RIFLE.

PARTS I & II - PREVIOUSLY AUTHORIZED - \$1,113,170.

PART III - THIS REQUEST

(17,170) REDUCTION.

\$1,096,000.

This project is included

in Forecast No. 2 in
the amount of \$29,790.

Date

To be commenced upon approval

Approved or
Authorized

Approved or
Authorized

Approved or
Authorized

be ready for use

To be physically completed Sept. 1948.

Approved or
Authorized

Estimate prepared by

W. H. Moore

4/12/48

Date

Approved or
Authorized

President and
General Manager

Approved or to form, accounting
aspects, and rules compliance

Authorized

BOARD OF DIRECTORS

Treasurer or
Assistant Treasurer

Date

Secretary

Preliminary approvals:

Date

Date

AL 0030159

16739

REMINGTON ARMS COMPANY, INC.

SUMMARY OF ESTIMATED EXPENDITURES

PROJECT NO. FD 721 - Ilion WORKS

	Labor	Material	Total
Land	—	—	—
Manufacturing buildings	—	—	—
Manufacturing equipment	—	401,527	401,527
Power and service facilities	94,075	198,800	292,875
Tooling	—	—	—
Dismantling and rearranging	—	—	—
Product development	401,598	—	401,598
Machine development	—	—	—
Project administration	—	—	—
Other	649,673	160,932	810,605
Provision for advancing wages and material prices	495,623	160,932	656,555
TOTAL			

ACCOUNTING DISTRIBUTION OF EXPENDITURES

	EXPENDITURES PREVIOUS PARTS	Expenditures This Year	Adjusting Entries	Net Change in Assets
Plant increase	701,402.	(7,800) RED.	(12,750)	680,852
Operations	411,768.	(10,170) RED.	—	401,598.
Depreciation	1,113,170.	(12,170) RED.	2,935.48	1,096,000.00

Write off of five worn obsolete type of machines used for cutting sharpeners. (See schedule in Project FI-172)

General Information
Project No. FD 721 Part II - Gun Works.

Introduction

Part II of this Project authorized funds in the total amount of \$1,113,170. to complete to all units, general to place Model 721-722 Rifle in production in eight calibers, including three new Remington calibers as follows:-

280 Remington
224 Remington
222 Remington.

A review of the program involved in adding these three new Remington cartridges to the ammunition line and providing Model 721 and 722 Rifle to handle them indicated insufficient economic justification for caliber 280 Remington and 224 Remington.

Retention of these two calibers was recommended in a combined meeting of the Arms and Ammunition Product Committee on Mar. 26, 1946 and approved by Management on

181839

Description of Proposed Work

In accordance with this decision, all work on the development of Model 721 for caliber 280 Remington and Model 722 for caliber 222 Remington has been stopped. Development of Model 722 for caliber 222 Remington, however, will be completed for production.

Remarks

A revision in Estimated Earnings and Return on Investment is attached. The Total Investment after completion of this project is reduced by \$40,700 from \$1,246,765 to \$1,206,065. Net Earnings are increased (or decreased) to \$213,469 and the Return on Investment is increased (or decreased) from 13.1% to 17.2%.

cc: C. E. Davis
D. F. Carpenter
W. U. Reisinger
B. E. Strader
M. R. Warden
J. F. Craig
E. C. Hadley

H. Gregg

Bridgeport, Connecticut
March 24, 1948

TO: W. L. CLAY (18)
FROM: G. O. CLIFFORD
SUBJECT: NEW CENTER-FIRE CARTRIDGES

In accordance with the Products Committee Chairman's request of March 5, 1948, we submit herewith the attached study covering the overall story of guns and ammunition on the subject caliber.

The results of this study indicate the return on the combination gun and ammunition development is only 10%. Therefore, the project should be examined in view of this information, to determine if there are any other reasons why it should be continued. It was also found that the ballistics of the cartridges developed are approximately those of the original objectives.

It is suggested the report and recommendations be reviewed at a combined meeting of the Arms and Ammunition Division of the Products Committee.

G. O. Clifford
Technical Director

GHJ/fgb
Attchs.

*Revised to
280 vvv
but keep
vvv Rm*

H

20039

AL 0030163

SUMMARY

Purpose of Study

The proposal to develop a line of new "Remington" high power center fire cartridges has been under consideration for a number of years. Experimental work with the cartridges has been underway since January 1946 and recently culminated in pilot production runs (up to 6000) of the following:

.280 Remington-150 gr. S.P.C.L.
.280 " 130 gr. S.P.C.L.
.224 " 56 gr. S.P.
.222 " 48 gr. S.P.

The major portion of the gun development and tooling of the new model rifles to accommodate the three new calibers is yet to be done.

There has always been considerable question as to the economics of the three new cartridge and gun developments. Recent information indicates a \$2.00 increase in each rifle cost for the Caliber .224 Remington. Further review indicates the ballistics of some items are less desirable than was anticipated. In view of this the March 4, 1948 meeting of the Products Committee recommended the discontinuance of gun and cartridge work on the Caliber .280 Remington until a final decision is reached on the 130 gr. bullet design, which was followed by a request for a complete review of the program.

The work reported herein includes an economic and ballistic evaluation based on current information.

Results

1. Economics of the new cartridges based on Pointed S.P. bullets in .224 Remington, .222 Remington and S.P.C.L. bullet in .280 Remington, 130 gr. and pointed core-lokt in .280-130 gr. are as follows:

	<u>Cash</u> <u>Outlay</u>	<u>Working</u> <u>Capital</u>	<u>Total</u> <u>Investment</u>	<u>Net</u> <u>Gain</u>	<u>%</u> <u>Return</u>
.280-150 gr. S.P.C.L. \$ 7,020)			40,880	2830)	14.1
.280-130 gr. Pointed C.L. 23,800)		\$10,260		2830)	14.1
.224 Rem.-56 gr.S.P.Pointed 14,270		770	17,040	988	5.8
.222 Rem.-48 gr.S.P.Pointed 12,570		5,300	17,870	2420	13.5
Total	\$59,460	16,330	75,790	6558	8.7

2. Economics of the new model guns chambered for the new calibers are as follows:

Note: Based on M/721-722 only.

	Added Quantity	Cash Outlay	Working Capital	Total	Net Gain	% Return
.280 Rem. M/721 *	500	\$13,108	\$29,000	42,108	3,032	7.2%
.224 Rem. M/722	330	13,108	4,700	17,808	2,113	11.9%
.222 Rem. M/722	1000	49,308	14,000	63,308	7,687	12.1%
Total	1830	\$75,524	\$47,700	123,224	12,832	10.4%

3. Economics of the new cartridge-gun combination are as follows:

	Cash Outlay & Working Capital	Net Gain	% Return
.280 Rem.	\$2,988	\$8,812	10.6%
.224 Rem.	34,848	2,501	7.2%
.222 Rem.	81,178	10,107	12.5%
Total	\$199,014	\$21,420	10.8%

Expended to date all calibers guns and ammunition - \$47,584

Return on unexpended balance - \$21,420 ÷ \$151,430 = 14.1%

4. According to the records the ballistics developed for the three new cartridges are very close to the original ballistic objectives. It may be pointed out the original objectives envisioned new center fire cartridges for the new model rifles having the "Remington" name and with only marginal ballistic advantage over existing competitive cartridges.

Recommendations

- 1- The economics are border line, therefore, a decision as to continuance of the project should be based upon a realistic evaluation of the intangible advantages.
- 2- If it is decided to go ahead with the development we recommend the bullet design of the .280 Remington caliber be limited to either the S.P.C.L. design or the pointed so-called "nib nose" design.

* Normal Sales Forecast of 2000, .280 Remington caliber and decrease of 1500 in 270 caliber

BIBLIOGRAPHY

Exhibit A

Cost Evaluation Summary - New Center Fire Cartridges

Exhibit B

Cost Evaluation Summary - 280 Rem - 224 Rem - 222 Rem
Calibers for Model 721/22 Guns

Exhibit C

Historical information on ballistics of new Center Fire
cartridges

- 1 Letter dated August 19, 1944 - From J. H. Hodgson to H. A. Brown
Subject: Proposed New Cartridges
- 2 Letter dated September 7, 1944 - From H. A. Brown to
J. H. Hodgson
Subject: Center Fire Ammunition Development
- 3 Letter dated September 18, 1944 - From E. L. Sample to
C. B. Walls
Subject: New Center Fire Cartridges
- 4 Tabulation showing ballistics of new Center Fire
cartridges compared to objective
- 5 Historical account of Products Committee action on
new Center Fire cartridge development.

**NEW CENTER FIRE CARTRIDGE
SUMMARY COST EVALUATION 3-22-48**

Order of Magnitude Estimates - Summary of Costs - 0 to 100%

	280-160 gr. S.P.C.L.	280-150 gr. Pointed C.L.	324-84 gr. S.P.	324-84 gr. S.P.	Total
Normal Sales Volume-Rom.	88 $\frac{1}{2}$	190 $\frac{1}{2}$	24 $\frac{1}{2}$	100 $\frac{1}{2}$	492 $\frac{1}{2}$
Peters	13	28	4	23	75
Total	101	218	28	123	567
Outside Sales \$	\$7,700	\$16,700	\$1,800	\$9,200	\$35,400
Gross Margin	3,280	6,430	660	4,060	
Less 8% of all other Exp.	260	510	52	320	
	3,000	5,890	598	3,730	
Less 35%	1,050	2,060	210	1,310	
Net Prospective Gain	1,950	3,830	388	2,420	8,588
Expenditure:					
Technical Division	5,580	14,600	14,800	11,100	
Plant	1,470	9,000	1,470	1,470	
Total	7,020	23,600	16,270	12,570	\$59,460
Added Working Capital	3,220	7,040	770	5,300	16,330
Total Investment	10,240	30,640	17,040	17,870	75,790
Return on Investment	19%	12.5%	2.3%	13.4%	11.5%
Unexpended	\$1,500	\$20,600	\$2,000	\$1,500	\$25,600

Revised 3/22/48 for new Normal Sales Forecast.

GHL/40

Exhibit A

24239
AL 0030167

REMINGTON ARMS COMPANY, INC.

COST EVALUATION - SUMMARY M/721-722 - Added Calibers 280 Rem., 222 Rem. and 224 Rem.

EXHIBIT B

25839
AL 0030168

	Basic 3 Calibers	Add 280 Rem.	Deduct Part Of 270 Rem.	Net Add For 280 Rem.	4 Calibers	2 Calibers	Add 222 Rem.	3 Calibers	Add 224 Rem.	4 Calibers
Sales Quantity	11,430	2,000	1,500	500	11,930	2,370	1,000	3,370	330	3,700
Outside Sales	499,605	87,420	65,565	21,855	521,460	97,075	40,960	138,035	13,517	151,552
Factory Cost										
Direct Material	70,752	12,380	9,285	3,095	73,847	14,670	6,210	20,880	2,828	23,708
Direct Labor	59,207	10,360	7,770	2,590	61,797	12,277	5,230	17,507	1,709	19,216
Mfg. Expense	162,083	27,350	20,513	6,837	168,920	49,319	13,807	63,126	4,512	67,638
Plant Overhead	56,668	-	-	-	56,668	17,575	-	17,575	-	17,575
Inv. Adjustment	6,917	1,002	751	251	7,168	1,859	505	2,364	181	2,545
Tool Amortization	22,905	3,840	-	3,840	26,745	7,104	1,920	9,024	634	9,658
Total	378,532	54,932	38,319	16,613	395,145	102,804	27,672	130,476	9,864	140,340
Admin. & Sales Expense	52,146	-	-	-	52,146	15,155	-	15,155	-	15,155
Total Commercial Cost	430,678	54,932	38,319	16,613	447,291	117,959	27,672	145,631	9,864	155,495
Operative Earnings	68,927	32,488	27,246	5,242	74,169	(20,884)	13,288	(7,596)	3,653	(3,943)
Net Earnings	39,874	18,794	15,762	3,032	42,906	-	7,687	-	2,113	-
Investment	920,677	32,600	-	32,600	953,277	255,588	29,600	285,188	8,300	293,488
Development Cost	215,426	9,508	-	9,508	224,934	143,618	33,708	177,326	9,508	186,834
Total	1,136,103	42,108	-	42,108	1,178,211	399,206	63,308	462,514	17,808	480,322
Net % Return				7.2%			12.1%		11.9%	

WEG:hsk
3-23-48

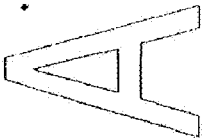


Exhibit C-1

cc: A. E. Buchanan, Jr.
G. O. Clifford
R. E. Evans
G. R. McCormick

Bridgeport, Connecticut
August 19, 1944

TO: H. A. BROWN
FROM: J. H. HODGSON
SUBJECT: PROPOSED NEW CARTRIDGES

Because of the excessive variety of ammunition now being manufactured here, it is thought that new cartridges should be considered for production only if they meet one of the following qualifications:

1. Will fill a performance deficiency in the line of products - such as a high power low cost rifle cartridge like the .267 Rim Fire.
2. Provide more universal performance and will, therefore, actually obsolete several products now being made.
3. Will be capable of withstanding higher pressures than existing ammunition and, therefore, when combined with a gun which is stronger than competitors, will furnish a combination which will offer better performance than is now available.

This last qualification will be difficult to meet as ammunition is in general loaded to maximum safe pressure limits and even a slight increase results in case casualties or primer difficulties.

The proposed new cartridges are evaluated on this basis below.

a. .284 Remington Magnum

Proposed Bullets - 139 grain M Core Lekt, 139 grain Pointed Soft Point, and 175 grain Pointed Soft Point.

Ballistics

139 grain M Core Lekt	M.V. 3280 ft/sec.	M.E. 3320 ft. lbs/sec.
139 grain Pointed Soft Point	M.V. 3380 ft/sec.	M.E. 3500 ft. lbs/sec.
175 grain Pointed Soft Point	M.V. 3060 ft/sec.	M.E. 3640 ft. lbs/sec.

Established cartridges within 500 ft. lbs. per sec. muzzle energy.

1. .300 magnum

Comments:

There should be some demand for a cartridge of this type for long range big game hunting. However, as .300 Magnum has the same ballistic potential and is already established, it would seem better to develop additional bullets for the latter rather than design a new cartridge. If the Pointed Core Lokt bullet now being developed proves successful, that this be used universally rather than carrying both Mushroom and Pointed Soft Point types.

B. .280 Remington

Proposed Bullets - 139 grain Mushroom Core Lokt, 139 grain Pointed Soft Point and 175 grain Pointed Soft point.

Ballistics

139 grain Mushroom Core Lokt M.V. 3080 ft/sec. M.E. 2930 ft. lbs/sec.
139 grain Pointed Soft Point M.V. 3230 ft/sec. M.E. 3220 ft. lbs/sec.
175 grain Pointed Soft Point M.V. 2660 ft/sec. M.E. 2750 ft. lbs/sec.

Established cartridges within $\pm$ 500 ft. lbs. per sec. muzzle energy.

1. .300 Magnum
2. .30-06 Springfield
3. .270 Winchester
4. .348 Winchester

Comments:

As the .30-06 Springfield is too well established to be affected seriously by other cartridges having the same ballistics and as the proposed new cartridge offers nothing not available in this and the .270 Winchester, the production of this cartridge is not recommended.

C. .276 Remington

Proposed Bullets - 130 grain Mushroom Core Lokt, 150 grain Soft Point Core Lokt.

Ballistics

130 grain Mushroom Core Lokt M.V. 2830 ft/sec. M.E. 2310 ft. lbs/sec.
150 grain Soft Point Core Lokt M.V. 2420 ft/sec. M.E. 1950 ft. lbs/sec.

Established cartridges within $\pm$ 500 ft. lbs. per sec. muzzle energy.

1. 7 m/m Mauser
2. 7.92 m/m Mauser
3. 8m/m Lebel
4. .220 Swift
5. .257 Remington-Roberts
6. .270 Winchester
7. .30-30 Winchester
8. .30 Remington
9. .300 Savage
10. .30-40 Krag

- A
11. .303 Savage
 12. .303 British
 13. .32 Remington
 14. .32 Winchester
 15. .348 Winchester
 16. .35 Remington
 17. .35 Winchester
 18. .401 Winchester
 19. .405 Winchester
 20. .45-70 High Velocity

Comments:

In view of the excessive number of cartridges available with approximately the same muzzle energy and because these cartridges are used mainly for deer and medium game hunting which does not have critical ballistic requirements, the production of this cartridge is not recommended.

D. .224 Remington

Proposed Bullets - 48 grain Pointed Soft Point, 55 grain Mushroom.

Ballistics

48 grain Pointed Soft Point M.V. 4200 ft./sec. M.E. 1890 ft.lbs./sec.
55 grain Mushroom M.V. 3950 ft./sec. M.E. 1910 ft.lbs./sec.

Established cartridges within $\pm$ 300 ft. lbs. per sec. muzzle energy.

1. 6.5 m/m Mannlicher
2. .220 Swift
3. .25-35 Winchester
4. .250 Savage
5. .257 Remington-Roberts
6. .30-30 Winchester
7. .30 Remington
8. .300 Savage
9. .30-.40 Krag
10. .303 Savage
11. .32 Remington
12. .32 Winchester

Comments:

All the cartridges in the above list do not compare directly with the proposed .224 Remington for specific use on predatory game but are shown as "all around" cartridges which can successfully be used in this type of shooting. They also have the advantages of other uses and, therefore, represent sales competition to this product. It is thought that the great majority of shooters would prefer a more adaptable cartridge than this and as there is sufficient choice available for vermin cartridges, its production is not recommended unless it can be shown that it will definitely obsolete several other cartridges.

A
S. .220 Remington

Proposed Bullets - 45 grain Soft Point.

Ballistics

45 grain soft Point M.V. 3150 ft./sec. M.E. 990 ft.lbs/sec.

Established cartridges within $\pm$ 300 ft. lbs. per sec. muzzle energy.
(.22 to .30 Cal.)

1. .213 Bee
2. .219 Zipper
3. .22 Hornet
4. .22 Savage
5. .25-20 Winchester
6. .30 Carbine

Comments:

This cartridge is a border-line case. It offers attractive ballistics for woodchuck and crow shooting but this is countered by a fairly wide selection of other cartridges in the same range for a rather limited field of shooting. If it could be counted on to obsolete .218 Bee, the .22 Hornet, the .25-20 Winchester and the .32-20 Winchester, its production is recommended otherwise not.

General:

The classification of established cartridges with approximately the same ballistic performance as the proposed cartridge is known to be somewhat empirical and open to criticism. It is, however, intended to show the wide selection already available to shooters and to indicate the complexity of manufacturing all these items.

As the comments on the above cartridges largely represent only the manufacturing view point and are probably somewhat prejudiced in favor of simplification, it is suggested that this program be discussed at the next Staff Meeting.

Engineering Superintendent
Ammunition Section

JHH/hb

Exhibit C-2

CC: A. E. Buchanan, Jr.)
G. O. Clifford) 1
R. E. Evans
G. R. McCormick

Bridgeport, Connecticut
September 7, 1944

TO: J. H. HODGSON
FROM: H. A. BROWN
SUBJECT: CENTER FIRE AMMUNITION DEVELOPMENT

Your comments contained in your letter of August 19 are interesting. It is true that a wide selection of center fire cartridges is available for sportsmen; conceivably more than are actually needed. However, obsolescence of calibers for which a quantity of guns is at present available consumes appreciable time because of the traditional pride not only of ownership of old guns but also of continuing use of these guns.

This situation, however, has not prevented competition from developing new cartridges identified by their name, thereby gaining valuable prestige in the market. The 1942 listing of center fire ammunition includes 73 calibers. Eliminating "Miscellaneous" and "Foreign" and using only those cartridges which carry an Arms Company name, we have 51 cartridges, divided as follows:

<u>Name</u>	<u>Number</u>	<u>Percent</u>
Winchester	23	45.1%
Colt	11	21.5
Remington	5	9.8
Smith and Wesson	5	9.8
Savage	4	7.8
Springfield, Krag, Government	3	6.0
	51	100.0

In addition to the above, some miscellaneous items are recognized by the trade as Winchester developments: .218 Bee, .219 Zipper, .220 Swift. Winchester and Western also are credited with sponsoring the .300 and .375 Magnums. The .22 Hornet was developed at the Springfield Armory but was promoted commercially by Winchester. In this picture there is a glaring dearth of

September 7, 1944

SUBJECT: CENTER FIRE AMMUNITION DEVELOPMENT

"Remington" calibers.

Sportsmen, when buying ammunition of Remington manufacture, are undoubtedly speaking the names Winchester, Savage, Springfield, etc., to the clerk in making their wants known. The .30/30 cartridge is known as ".30/30 Winchester" or "Winchester Center Fire (WCF)" and not as ".30/30 Remington" or "Remington Center Fire". The name is ".270 Winchester"; not ".270 Remington" - ".300 Savage"; not ".300 Remington". In only five of the 73 items listed for sale does the name Remington identify the cartridge.

To impress the trade with the fact that we can and do contribute to new developments in the ammunition field, we have proposed new "Remington" calibers. These, we believe, are susceptible to relatively simple, inexpensive and prompt development so as to be available for our new guns which are being designed wisely to handle greater pressures than present standards. This objective in gun design, therefore, will permit further improvement to ammunition in the future whereby even greater speed, pressure, power and flatter trajectory can be achieved.

The proposed bullets have been selected from existing designs to obtain greater sustained velocity and flatter trajectory. Undoubtedly better bullets will, and should be, conceived in the future and introduced as improvements to keep the line "alive".

In your discussion you have listed established cartridges within plus or minus 500 foot pounds muzzle energy of the proposed new items. In our opinion, this consideration is too broad. On such a premise, the following more recent popular cartridges could not have justified development:

.22 Hornet	.300 Savage
.220 Swift	.270 Winchester
.250 Savage	.35 Remington

These cartridges, however, were introduced and they definitely increased trade prestige of the identifying names. Remington's contribution has been mighty meagre. We hope it can be revived promptly and kept "alive" in the future.

The superior performance of new cartridges should eventually replace existing ones and in their adaptation to our new gun designs they will stimulate arms sales.

HAB:MR

31039
AL 0030174

Exhibit C-3

cc: G. O. Clifford
R. E. Evans

Bridgeport, Connecticut
September 18, 1945

TO: C. B. WELLS
FROM: E. L. WEMPLE
SUBJECT: NEW CENTER FIRE CARTRIDGES

In recent years a number of suggestions have been received for Remington to develop and market new design center fire cartridges. Herewith is material which lists and describes many of the proposed center fire cartridges. The same type of descriptive material is supplied for existing center fire cartridges. The proposed new cartridges considered are:

220 Remington	308 Remington Magnum
224 Remington	358 Remington Magnum
276 Remington	400 Remington Magnum
258 Remington	450 Remington Magnum
280 Remington	Donaldson Wasp
350 Remington	22 High Velocity
284 Remington Magnum	353 OHF

The material is arranged as follows:

1. Proposed new Remington cartridges with descriptive material.
2. A letter by J. H. Hodgson listing present cartridges that would compete with several of the proposed new cartridges.
3. A board showing appearance samples and some descriptive material for some of the proposed new cartridges.
4. Comments on each of the new cartridges relative to the manner in which the new cartridge would fit into the present line.

32839
AL 0030175

C. B. Wells

-2-

September 18, 1945

SUBJECT:

NEW CENTER FIRE CARTRIDGES

5. Full descriptive material on existing rifle cartridges grouped as follows:

- a. 22 Cal.
- b. 25 Cal.
- c. 270 Cal.
- d. 30 Cal.
- e. 32 Cal.
- f. 35 Cal.
- g. 375 Magnum and 30 Cal.
- h. 40 Cal.
- i. 44 Cal.

6. A tabulation showing factory cost, commercial cost and net selling price for typical center fire cartridges at 1939 and at 1945 costs.

E. L. Wemple, Manager
Development Division
Technical Department

ELW:MR
Att.

33839
AL 0030176

COMMENTS ON
PROPOSED NEW CENTER FIRE CARTRIDGES

220 REMINGTON

\$70.00 M retail price is too high. Comparable cartridges sell for much less money.

224 REMINGTON

This cartridge has a higher velocity than competing cartridges except the 220 Swift and it does have a slightly higher energy than the 220 Swift. The 224 Remington might have some advantage over competition if the 4,000 f/s velocity can be regularly obtained and if the accuracy is equal to or better than the Hornet, Swift and Zipper.

276 REMINGTON

It is planned to sell this at the same price as the 300 Savage, yet it has lower velocity and bullet energy.

258 REMINGTON

This cartridge lies between the 257 Roberts 100 grain bullet with 2800 f/s velocity and the 30-06 110 grain bullet with 3200 f/s velocity.

280 REMINGTON

This cartridge is almost identical with 30-06 and 270 Winchester and would not appear to have any advantage over those cartridges.

350 REMINGTON

This cartridge has the same ballistic characteristics as the 35 Newton. It is slightly more powerful than the 30-06 220 grain cartridge and has much more power than the 348 Winchester, 35 Winchester and 35 Remington.

284 REMINGTON MAGNUM

This cartridge is almost identical with the 300 Magnum.

308 REMINGTON MAGNUM

This cartridge is more powerful than the 300 Magnum but is not as powerful as the 375 Magnum. It would probably be a small sales volume item.

COMMENTS ON
PROPOSED NEW CENTER FIRE CARTRIDGES

359 REMINGTON MAGNUM

This cartridge compares with the 375 Magnum but has a slightly lower velocity and lower 300 yard bullet energy.

400 REMINGTON MAGNUM

This cartridge is somewhat more powerful at 300 yards than the 375 Magnum.

450 REMINGTON MAGNUM

This cartridge is more powerful than the 375 Magnum.

THE DONALDSON WASP

This cartridge has the same characteristics as the 224 Remington but has a rimmed case.

22 HIGH VELOCITY (G. R. McCormick)

This cartridge has the same ballistic characteristics as the 224 Remington but has a larger case. Personnel in the Ammunition Technical Division are not familiar with this cartridge and considerable investigation work is needed.

333 OKH

This cartridge, with its different bullet weights, has approximately the velocity and energy of the 350 Remington, 357 Remington and 357 Remington Magnums but has a much smaller case. Much additional investigation work would be necessary to determine if this would be a practical cartridge to load and sell. Such problems as sensitivity, pressure and load techniques would require thorough investigation.

ELN:MR
9-18-45

35839
AL 0030178

TABULATION SHOWING BALLISTICS OF NEW CENTER FIRE CARTRIDGES COMPARED TO OBJECTIVE

	<u>.222 REMINGTON</u>			<u>.224 REMINGTON</u>		
	Green Board 11-8-45 .220 Rem. 45 gr. S.F. (Approx.)	Dec.-1946 Report .221 Rem. 45 gr. S.F.	May.-1947 Development .222 Rem. 45 gr. S.F.	Green Board 11-8-45 .224 Rem. 45 gr. S.F. (Approx.)	Dec.-1946 Report .224 Rem. 45 gr. S.F.	May.-1947 Development .224 Rem. 45 gr. S.F.
Velocity-Muzzle		3110	3160		4000	3954
Instrumental	3000		3000	4000		3800
100 yds.		2650	2650		3405	3380
200 "			2100			2854
300 "			1870			2378
500 "			1100			1598
Energy - Muzzle		1030	1036		1990	1942
100 yds.		775	714		1510	1419
200 "			470			1012
300 "			297			702
500 "			129			317
Pressure-Max.Aver.(10)			50000			51000
Trajectory-Bullet Drop						
100 yds.						
200 "						
300 "						
Accuracy-M.R.-200 yds.			1.6"			1.5"

GHJ:dd
3-24-48

Exhibit C-4

36039
AL 0030179

.280 REMINGTON

Green Ward
11-8-45 Products Committee

Dec. 1946
Report

May - Oct. 1947
Development

Exhibit C-4

AL 0030180

.280 Rem.
139 Ft.S.P.
Proposed Cartridge
(Approx.)

.280 Rem.
135 Mch.
Proposed Cartridge
(Approx.)

.280 Rem.
178 Ft.S.P.
Proposed Cartridge
(Approx.)

.280 Rem.
140 Ft.S.P.
Proposed Cartridge
(Approx.)

.280 Remington -
130 S.P. 130 S.P. 130 Pointed
Core Lakt Core Lakt Core Lakt

Velocity-Muzzle
Instrumental
100 yds.
200 "
300 "
500 "

3150

3000

3430

3470

3908

3148

3175

3600

3000

3066

3324

2828

2775

3208

2215

2440

1937

1876

2150

1517

1393

1685

Energy - Muzzle
100 yds.
200 "
300 "
500 "

2930

2810

2857

2906

2580

2123

1991

2220

1623

1415

1717

1250

1015

1333

766

580

819

Pressure-Max.Aver.(10)

50000

52000

Trajectory-Bullet Drop
100 yds.
200 "
500 "

2.3"

2.0"

1.9"

10.0"

9.0"

8.4"

24.9"

23.3"

20.9"

GHJ:dd
3-24-48

CC: S. M. Alvis A. J. Greene
G. M. Calhoun W.F.H. Mattlage
H. K. Faulkner J. J. Phillips
K. G. Gilmore (5) A. J. Seckner
Illion Tech. File

ADVICE OF PHYSICAL COMPLETION

Technical Department

WORKS - Illion

DATE - 12/19/49

PROJECT - PD-721

TO: G. W. Radley

FROM: K. C. Gilmore

SUBJECT: MODEL 721-722 BOLT ACTION HIGH POWER
CENTER FIRE RIFLE

All work having been completed on this project, it is now being physically closed in its entirety.

[Signature]
Arms Technical Division

Requested by

[Signature]
Approved by

m1
12/19/49

AL 0030181

38239

OC: W. E. Gregg

Ilion, New York
April 14, 1948

TO: W. G. Burckel
FROM: K. C. Gilmore
SUBJECT: PROJECT FD-721 Part III
MODEL 721-722 BOLT ACTION HIGH POWER CENTER
FIRE RIFLE

We are transmitting herewith forty nine (49) copies of the subject Project. The copy containing Ilion's signatures has been forwarded to W. E. Gregg, as per his request, for review prior to securing the Bridgeport signatures.

I would suggest that you contact Mr. Gregg and have him turn over the copy containing the signatures to you for circulation at Bridgeport so that all necessary approvals are secured.

(SIGNED) K. C. GILMORE

K. C. Gilmore
Supervisor-Control Unit
Ilion Technical Division

ml
att. 49

AL 0030182