

R & D DEVELOPMENT COSTS
NEW BOLT ACTION RIFLE (N'BAR)

5-2-89

Start 2

THE PURPOSE OF THE NEW BOLT ACTION RIFLE (N'BAR) IS TO OFFER A REPLACEMENT FOR THE M/700 "BDL" RIFLE CURRENTLY BEING PRODUCED. THE ^{NEW} DESIGN PARAMETERS WILL INCLUDE:

- o DETACHABLE MAGAZINE BOX
- o IMPROVED FIRE CONTROL -
 - NO CONNECTOR
 - TWO TRIGGER PULL SPRINGS (LOW SPRING ^{RATE})
 - SEALED FIRECONTROL
 - BALANCED TRIGGER
 - TRIGGER & SEAR BLOCK
 - NON RETRAFFITTABLE TO M/700
- o BOLT LOCK W/OVERRIDE
- o NEW SCOPE MOUNTS - POSSIBLY AFTER MARKET BASES & RINGS, TO BE OFFERED WITH RIFLE PACKAGE
- o NEW EXTRACTOR SYSTEM
- o NEW "CUSTOM SHOP" BARREL CONTOUR
 - MOUNTAIN RIFLE CROWN
- o IMPROVED BEDDING / ACCURACY FEATURES
 - EX: - THICKER BARREL BRACKET
 - RELIEVED THREAD - 2EL. FIT & ^{FULL} HUB BEARING,
- o M/700 RECEIVER TO START WITH SAME ^{ROUND} BLANK SIZE & COSMETICALLY ALTERED BEHIND FRONT RING OF STEEL ^{OVER} LOCKING LUGS,
- o NEW WOOD STOCK - COSMETICALLY ALTERED FOR FITTINGS / DRESS UP / CHECKERING.

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THE "N'BAR" DESIGN FEATURES WILL INITIALLY BE PRODUCED IN 5 CAL'S. (30-06, 270, 280, 25-06 & 7MM MAG.) DURING THE FIRST YEAR OF INTRODUCTION, THESE DESIGN / COST ESTIMATES ARE BASED STRICTLY ON INTRODUCTION OF THOSE 5 CAL'S ONLY & IN LONG ACTION STD & MAG, CAL'S ONLY. IF AT A LATER POINT IN TIME OTHER CAL'S & SHORT ACTIONS ARE ADDED TO THIS PROGRAM THEY WILL HAVE ADDITIONAL DEVELOPMENT & INTRODUCTION COSTS ADDED.

① INITIAL DESIGN

JAN. 89 - JUNE 90

THIS INCLUDES PRELIMINARY EXPERIMENTAL DEVELOPMENT WORK, SKETCHES, SCHEMES, LAYOUTS, DESIGN, COMPUTER MODELING, DETAILING, & CHECKING. THIS DESIGN WILL BE A RE-DESIGN OF THE EXISTING M/700 RIFLE CURRENTLY IN OUR LINE, ONLY IN THOSE AREAS SO STATED ABOVE IN THE DESIGN PARAMETERS SECTION. SHORT ACTIONS & ADDITIONAL CAL'S WILL BE CONSIDERED DURING INITIAL DESIGN TO ALLOW THEM TO BE COMPATIBLE FOR DESIGN INCLUSION AT A LATER TIME. PERSONNEL REQUIRED TO ACCOMPLISH THIS WILL INCLUDE: ONE RESEARCH ENGINEER, FULL TIME, ONE CAD DESIGNER, ONE CAD DETAILER, 50% OF TIME, AS WELL AS SOME PART TIME HELP FROM ONE EOL ENGINEER, MODEL MAKER, M/C PROGRAMMER & TESTER.

JAN 89 - JAN 91

SEND VENDOR PARTS OUT FOR MANUFACTURABILITY & QUOTATION ESTIMATES

EARLY VENDOR CONSULTATION & INPUT IS REQUIRED DUE TO MANY PARTS FOR ^{DETACHABLE} MAGAZINE BOX, FIRE CONTROL,

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SCOPE MOUNTS & EXTRACTOR BEING VENDOR SUPPLIED PARTS WITH LONG LEAD TIMES & VENDOR DEVELOPMENT INPUT REQUIREMENTS FOR THE DESIGN. "HIGH SPOT" ESTIMATES WILL BE PERSUED EARLY TO DETERMINE FEASIBILITY OF PRODUCING AT A COMPETITING COST, WE WILL ALSO LOOK AT AFTER MARKET PRODUCTS ALREADY DEVELOPED, SUCH AS QUICK KLIP FOR A DETACHABLE MAGAZINE BOX & NUMEROUS SCOPE MOUNT/ RING MANUFACTURES. A ^{DECISION} ~~DETERMINATION~~ WILL HAVE TO BE MADE AT THIS TIME FOR PROJECT DIRECTION TO GO WITH A. TOTAL REMINGTON DESIGN MAGAZINE BOX OR AFTERMARKET ADAPTATION.

② BUILD INITIAL DESIGN PROTO TYPE GUNS

AUG 89 - APR 90

AT LEAST 3 PROTOTYPE GUNS WILL BE BUILT, ONE IN CAL 30-06 TO COVER SIMILAR CAL'S OF 280, 270, 25-06 ONE IN 7MM REM MAG. FOR MAG. CAL. AND ONE FOR ESTHETIC EVALUATION IN STD HEAD SIZE CAL. ALL COMMON PARTS WITH M/700 WILL BE PROCURED FROM THE POINT, CURRENT INVENTORY. ALL NEWLY DESIGNED PARTS WILL BE FABRICATED BY REMINGTON WHERE POSSIBLE OR BE DEVELOPED BY OUTSIDE VENDORS WITH ENGINEERING/DEVELOPMENT ASSISTANCE FROM REMINGTON. PERSONNEL REQUIRED WILL BE: ONE RESEARCH ENGINEER, ONE CAD DESIGNER, ONE CAD DETAILER, ONE M/C PROGRAMMER PART TIME AND, ONE MODEL MAKER FULL TIME, ONE PART TIME

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③ INITIATE DESIGN REVIEW TEAM ANALYSIS

MAR 90 - MAY 90

THEIR PURPOSE WILL BE TO REVIEW DESIGN AT THIS POINT AND LOOK AT DESIGN OBJECTIVELY. INPUT IS NECESSARY FROM PROCESS ENG, CHEMICAL/MATERIALS ENGINEERING, MARKS SERVICE FEEDBACK, LEGAL, AS WELL AS OTHER DESIGNERS. EACH GROUP WILL REVIEW DESIGN AS TO POTENTIAL "ROAD BLOCKS" & FEASIBILITY TO PRODUCE AN ACCEPTABLE DESIGN.

④ TEST PHASE I PROTOTYPES

APR 90 - MAY 90

THE TWO TEST PROTOTYPES ONE STD. CAL. & ONE MAGNUM CAL. WILL BE PRELIMINARILY TESTED AS TO FIT, FORM, & FUNCTION. THESE TEST GUNS WILL SHOW UP ANY MAJOR OR MINOR DESIGN SHORTCOMINGS PRIOR TO BUILDING MULTIPLE TEST GUNS FOR EVALUATION OF FUNCTION, ACCURACY, ENDURANCE. TESTING WILL CONSIST OF DRY FIRING/CYCLES, LIVE FIRING, FUNCTION & ACCURACY. EXTENDED TESTING OF ONE OR BOTH GUNS MAY BE DESIRED AT THIS TIME DEPENDING ON PRELIMINARY FUNCTIONING RESULTS.

A MARKETING/SALGS MANAGER MEETING WILL BE HELD TO EVALUATE STYLING, AESTHETICS, FEATURES. UTILIZING THE 3RD PROTOTYPE GUN BUILT. THEIR DECISIONS WILL AFFECT TIME FOR RE-DESIGN & REBUILD OF MODELS FOR BOTH TESTING & AESTHETICS. PERSONNEL REQUIRED ARE: ONE RESEARCH ENGINEER FULLTIME, PART TIME ALLOWANCES FOR ONE EOL ENG, ONE MODEL MAKER, ONE CAD DESIGNER & ONE TESTER

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RE-DESIGN (DECISION POINT)

MAY 90 - AUG 90

RE-DESIGN BEGINS AS SOON AS PROBLEMS ARISE IN PHASE I ASSEMBLY OR TESTING, & CONTINUES THRU PHASE I TESTING. DEPENDING ON THE EXTENT & NATURE OF PARTS REQUIRING REDESIGN, AS A RESULT OF TESTING, MARKETING, LEGAL OR DESIGN REVIEW TEAM RECOMMENDATIONS WILL GREATLY AFFECT ^{STRAIGHT} FORWARD PROGRESS OR DELAYS FOR RE-DESIGN, RE-EVALUATION & RETESTING. DEPENDING ON HOW MUCH & HOW MANY COMPONENTS NEED ATTENTION WILL CONSTITUTE A NEED FOR ADDITIONAL PERSONNEL SUCH AS: ONE RESEARCH ENGINEER, ONE EDL ENGINEER, ONE CAD DESIGNER, ONE CAD DETAILER, ONE MODEL MAKER FULL OR PART TIME. STYLING, STOCK DESIGN, WEIGHT, BALANCE, SAFETY WILL NEED TO BE ADDRESSED AT THIS PHASE. ALSO HIGH SPOT ECONOMICS OF THE WHOLE PROGRAM WILL NEED TO BE COMPLETED AT THIS TIME, & EVALUATED TO DETERMINE PROJECT FEASIBILITY, & PATH FORWARD OR RE-DESIGN.

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BUILD PHASE II DESIGN SAMPLES (15)

JULY 90 - JAN. 91

A TOTAL OF 15 DESIGN SAMPLE GUNS WILL BE BUILT (3 OF EACH CAL.) FOR THIS PHASE II. THE MAJORITY OF THE DESIGN, LEGAL, & STYLING QUESTIONS WILL BE RESOLVED DURING THIS PHASE. AS MANY VENDOR SAMPLE PROTOTYPE PARTS AS ARE AVAILABLE, WILL BE USED, OTHER NON VENDOR PARTS WILL BE MADE BY PRODUCTION, MGR SHOP OR N/C SHOP. ONGOING VENDOR VISITS WILL BE REQUIRED TO CONSULT & FABRICATE

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PHASE
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TEST PHASE II DESIGN SAMPLES

TEST SAMPLE PARTS FROM ^{VENDOR} TEMPORARY TOOLING, SOME IN HOUSE FINISHING OF THESE ^{VENDOR} COMPONENTS WILL BE NECESSARY BY THE MODEL SHOP OR N/C. PERSONNEL REQUIRED TO IMPLEMENT THIS PHASE II ARE: TWO MODEL MAKERS & ONE ENGINEER WILL BE REQUIRED FULL TIME. ONE N/C PROGRAMMER PART TIME, JAN. 91 - MAR 91

THESE DESIGN SAMPLE GUNS WILL BE TESTED FOR FUNCTION, ENDURANCE, STRENGTH - BLW/UP, CRUD & TEMPERATURE EXTREME TESTS, SAFETY PERFORMANCE, DRY FIRING, FIELD FUNCTION, TWO 30-06 & TWO 7MM REM MAG. GUNS WILL BE SUBJECTED TO AN INTENTIONAL ABUSE TEST. THIS MAY CONSTITUTE SOME DESIGN CHANGES OR MODIFICATIONS AS DEMAND NECESSARY FROM TEST RESULTS, ^{PERSONNEL REQ'D ARE:} ONE ENGINEER & TWO TESTERS WILL BE REQUIRED FULL TIME & ONE MODEL MAKER & N/C DESIGNER PART TIME.

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RE-DESIGN -

FEB 91 - MAY 91

RE-DESIGN BEGINS AS SOON AS PROBLEMS ARISE DURING PHASE II TESTING & CONTINUES THROUGHOUT TESTING. THE TEST RESULTS WILL DETERMINE REDESIGN EFFORT NEEDED TO CORRECT ANY DEFICIENCIES OF THE DESIGN. ALL STYLING, MARKETING, & LEGAL CONCERNS WILL BE FINALIZED BY THIS TIME. IF A MAJOR RE-DESIGN OR MANAGEMENT CHANGE IN CRITERIA IS REQUIRED. A SUBSTANTIAL AMOUNT OF TIME & EFFORT WILL BE REQUIRED TO COMPLETE. PERSONNEL REQ'D WILL BE ONE EDL ENGINEER, ONE RESEARCH ENGINEER, ONE CAD DESIGNER, ONE CAD DETAILER WILL BE REQUIRED FULL TIME.

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- BUILD DESIGN ACCEPTANCE GUNS, -

MAR 91 - MAR 92

THE PURPOSE OF THE DESIGN ACCEPTANCE TEST IS FOR FINALIZING DESIGN COMPONENT PARTS TO BE FULLY TESTED IN SEVERAL GUNS PRIOR TO DESIGN TRANSMITTAL TO THE PLANT. A TOTAL OF 30 GUNS WILL BE BUILT INCLUDING ALL 5 CAL'S FOR A LARGE ENOUGH SAMPLE TO BE STATISTICALLY SOUND. THE MAJORITY OF PARTS WILL BE VENDOR PRODUCED PARTS ON PERMANENT TOOLING & IN HOUSE PARTS PRODUCED AS MUCH AS POSSIBLE ON PRODUCTION MACHINERY THAT WILL BE USED IN THE PROCESS OF FULL PRODUCTION SCHEDULES. SOME COMPONENT PARTS MAY NEED FINISHING OPERATIONS BY THE R&D MODEL SHOP, OR N/C SHOP. ALSO N/C WILL AID FMS OPERATIONS FOR PROGRAMMING & DEBUGGING. OTHER CURRENT PRODUCTION PARTS REQUIRED AS USED, OR IF ^{IN} NEED OF MODIFICATIONS WILL BE PRODUCED FROM THE PLANT. PERSONNEL REQ'D WILL BE: ONE ENGINEER, ONE N/C PROGRAMMER, & ONE MODEL MAKER FULLTIME. SOME PLANT PERSONNEL WILL BE REQUIRED PART TIME.

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TEST DESIGN ACCEPTANCE GUNS,

APR. 92 - JUNE 92

DESIGN ACCEPTANCE TESTING OF 30 GUN SAMPLES IS THE FINAL TEST PERFORMED ON THE DESIGN PRIOR TO TRANSMITTAL. NO ALTERATIONS OR MODIFICATIONS ARE ALLOWED DURING THIS TESTING PHASE TO THE TEST GUNS. THE TEST LAB HAS COMPLETE CONTROL OF THE TESTING, & PERFORM ALL TESTING IT DEEMS NECESSARY TO VERIFY DESIGN FOR RELEASE TO PRODUCTION.

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CONTROL GUN TESTING WILL BE RUN CONCURRENTLY WITH NEW DESIGN ACCEPTANCE TEST GUNS TO COMPARE CURRENT DESIGN WITH NEW OFFERING, ALSO TO INCLUDE COMPETITIVE PRODUCTS WHERE APPROPRIATE. TESTING WILL INCLUDE ENDURANCE, FIEL FUNCTION, DROP, DRY FIRE, STRENGTH, INTENTIONAL ABUSE, TEMPERATURE EXTREME, SOLVENT TESTING AND ACCURACY. WHEN THE TEST LAB ^{HAS} PASSED THESE GUNS ON ALL TESTS, A WRITTEN REPORT CERTIFYING THE GUN IS ACCEPTABLE FOR TRANSMITTAL IS FILED. PERSONNEL REQ'D ARE: ONE ENGINEER & FOUR TEST LAB PERSONNEL FULLTIME,

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MINI REDESIGN & DRAWING TRANSMITTAL JULY 92

BY THIS PHASE OF DEVELOPMENT, THE DESIGN IS FIRM & NO MAJOR SETBACKS SHOULD OCCUR. ONLY MINOR CHANGES OR UPDATES SHOULD TAKE PLACE. CHANGES WILL BE LIMITED TO PROCESS UPDATES, IMPROVING ENDURANCE, COST EFFECTIVENESS, & IMPROVED FUNCTIONALITY, ONLY ON PARTS FOUND TO BE PROBLEM AREAS FROM PREVIOUS TESTING. INITIAL TRANSMITTAL OF RESEARCH MODEL DRAWINGS & SPECIFICATIONS TAKES PLACE AT THIS TIME. PERSONNEL REQUIRED ARE: ONE ENGINEER & ONE CAD DRAFTSMAN FULLTIME

PROJECT APPROVAL (DECISION POINT)

JULY 92 - AUG 92

DURING THIS PERIOD FINAL MANAGEMENT APPROVAL OF THE DESIGN IS GIVEN & MONEY IS RELEASED TO BEGIN PRODUCTION TOOLING. ALL PERTINENT ECONOMICS AND PRODUCTION PROJECT ESTIMATES WILL BE

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COMPLETED FOR THIS PROJECT APPROVAL REPORT

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DRAFT MANUALS

AUG. 92 - OCT 92

THIS INVOLVES DEVELOPMENT OF TEXT & ILLUSTRATIONS FOR THE OWNERS MANUALS & INSTRUCTION BOOKLETS & FIELD SERVICE MANUALS. THIS WILL BE PREPARED IN CONJUNCTION WITH A COMMERCIAL PRINTER.

PERSONNEL REQ'D ARE: ONE ENGINEER & ONE PLATSMAN PART TIME WITH INPUT REQ'D FROM LEGAL DEPARTMENT & CUSTOMER SERVICE.