

cc: R. E. Fielitz  
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REMINGTON ARMS COMPANY, INC.  
FIREARMS PROCESS RESEARCH DIVISION  
MONTHLY REPORT  
APRIL 1985

*CBW*  
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4/23/85

### RECEIVER FLEXIBLE MANUFACTURING SYSTEM

M/1100 Receiver machining tests conducted at Cincinnati Milacron to date have demonstrated the ability to manufacture these components on the proposed equipment. Six of the test receivers were finished for gallery testing, however, five of these could not be assembled because of narrow action bar slots. This problem was traced to a deformation of the side panels which is believed to have occurred during clamping in the shaving of the front end of the action bar slots operation here at Ilion. Additional test receivers will now be processed and monitored at each subsequent operation to resolve this problem.

Machining tests at Cincinnati were disrupted for approximately one week to allow installation of a chiller unit for the hydraulic oil and coolant system on their test machine. This in addition to a thermal stabilizer package was added to correct a thermal growth problem experienced during previous machining tests. Testing resumed on April 20th.

Final project economics will be redone approximately one week after receipt of CAC estimate.

### SMALL PARTS FLEXIBLE MANUFACTURING

Breech Bolt fixtures for both A and B loadings are being fabricated with delivery expected by the end of April. A special form tool for the top radius and guide slot is out for design with an outside vendor.

Certain design changes to some small parts are being tested to facilitate manufacturing simplicity. Breech bolt samples have been modified in the machine shop to see if the extractor rest surface can be combined with the relief cut surface; results were marginal and further investigation is required. Barrel extension design modifications will be tested on the Matsuura CNC machine as soon as time is available on the machine.

### FLEXIBLE SMALL PARTS ASSEMBLY SYSTEM

Work is underway on debugging the breech bolt workstation at EDL. Trigger and trigger housing workstations have been debugged. Fixtures and escapements for these two stations are being hardened.

A quote has been received for the second assembly robot. Quotes for a second microVAX are being pursued.

At Ilion, work continues on part changes required to support the automatic system. Spacers with chamfers are being manufactured in Powdered Metal. Chamfered rivets have been ordered from Milford rivet, but require 6-8 weeks before delivery. Development rivets will be injection moulded in the

meantime. Triggers are being modified in the N/C shop. Trigger pins are currently out for quote. Ed Yutzler, PE&C, is obtaining tools to make modified breech bolts.

Shipment of the system will likely take place in June.

#### SERIAL NUMBER RECORDING SYSTEM

The RA81 mass data storage disk has been installed. The disk has improved response time at terminals and scanners in the system beyond expectations. Work continues to take full advantage of the disk's speed to reduce downtime for file maintenance and report generation.

Several standard operating procedures and process descriptions have been written and sent to warehouse management for approval.

#### GFM AUTOMATION

EDL will build the next Strip/Assemble machine and control cabinet, the robot gripper, and the system control cabinet. These efforts should be similar to that of the first system. The redrawn prints (on Remington format) have been updated and forwarded to D. S. Bargar to begin work on the Strip/Assemble machine for the second system.

#### SHOTGUN BARREL AUTOMATION

A three step process to refine the savings potential of shotgun barrel modernization is detailed as follows:

- o Review and document our current process
- o Investigate state of the art production technology
- o Test that technology on our product

Current process documentation should be completed by the end of June and some process investigation and testing to begin in late May.

#### CENTERFIRE BARREL AUTOMATION

The dBase III software is being used on the IBM-XT to develop a data base for the centerfire barrel process records. The process flow structure is complete. Programs have been written which allow the process records to be accessed from a given WIP# or model. Also, given a process step, all models and volumes can be found which pass through that step. Program refinement is needed to fully optimize the efficiency of the system, but this has already proven to be a valuable tool for optimizing the automation of this area. Process record data must now be entered into the appropriate data bases.

CUT CHECKERING DEVELOPMENT

The CoReMa machine has been dismantled for the rebuild stage of Z-Axis redesign to eliminate back-lash. It should be back together within a couple of weeks.

FORM ROLLING DEVELOPMENT

A request was sent to purchasing to have our shotgun firing pin quoted by Reed & Prince Manufacturing Company. They are a fastener manufacturing firm that specializes in cold formed parts.

FIREARMS PROCESS RESEARCH

PERSONNEL AS OF APRIL 1985

EXEMPT 9

BASZCZUK, ANDREW R.  
CZELUSNIAK, JAMES J.  
OWENS, EDWIN R.  
POARCH, CALVIN A.  
RITCHIE, C. EVAN  
SHUMWAY, DAN W.

NON-EXEMPT 1

PERRY, CELIA M.

WAGE 1

KLOCK, EDWARD

THORSLAND, CRAIG R. (RESIGNED EFFECTIVE 4/25/85)  
WORKMAN, CLARK B. (RETIRED 4/30/85)

DU PONT ENGINEERS

CHETOSKY, GORDON R.  
MCCLARY, JOHN A.

TEMPORARY EMPLOYEES

LEWIS, RICHARD J.  
STAFFORD, RICHARD L.