

cc: F. E. Morgan - A. O.

April 15, 1968

Mr. David H. Reinherd  
Reinard's Gun Shop  
R. D. #2 - Box 263  
Lititz, Pennsylvania 17543

Dear Mr. Reinard:

Thanks very much for your recent long letter.

That portion which referred to firearms has been forwarded to our Product Manager, Mr. F. E. Morgan.

In reference to the suggestions you had concerning ammunition, I would like to thank you for your comments. We were especially pleased to note your satisfaction with 22-250 and 6mm Remington "Power-Lokt" bullets. We were also glad to note your success with our "POWER PISTON" wad columns. Your remarks regarding shot sizes were also noted, and all we can say about the use of #5 shot in our loads is that public demand for this shot size has been very slight and we were, therefore, forced to discontinue it in some loads.

The old roll crimped 20 gauge Magnum loads with felt mold-tite and cardboard wadding were fine in their day. Those which you have remaining in your possession should give adequate results, but we do agree with you that the new Magnum loads will give far better results because of the "POWER PISTON" type shot containers which are currently being used.

Inasmuch as it would appear that our order of August, 1966, somehow went astray, we are forwarding to you at no charge, 20 .280 Remington and 20 .243 Winchester factory loads, Remington Index Numbers 1128 and 3243, respectively. We appreciate your letting us know that the original order was never received, and we will look into the matter to determine how this could have happened.

Mr. David H. Reinard  
Reinard's Gun Shop

April 13, 1968

-2-

Thanks very much for taking the time and trouble to write as you did, and please let us know whenever we can be of service.

Cordially yours,

REMINGTON ARMS COMPANY, INC.

*Nicholas Wiles, Jr.*  
Nicholas Wiles, Jr.  
Product Service

NW:lp

cc: F. E. Morgan

## DON'T SAY IT—WRITE IT

To G. M. CALHOUN ✓DATE 4/17/68FROM PHILIP H. BURDETTMODEL 700 BDL QUALITY

Letter Lloyd Fox to R. A. Williamson of March 21 explains what was found on the Consumer's Union gun and what steps have been taken to avoid this trouble in the future. Letter Fox to Williamson of April 2 explains the extent to which Quality Audit can be expected to pick up such defects.

Neither letter is very comforting. The second seems to say our designers are giving us parts which are interchangeable---most of the time. It explains that on a typical gun there are approximately 3,000 measurable characteristics. Of course, tolerance build-ups on many---perhaps most---of these will not lead to interferences.

If it is impractical for the designers to analyze in detail potential interferences, would it be practical to program the GE computer to do this? Such an analysis might permit redesign in a few critical spots or, at least, flag a few critical areas for inspection.

You have reminded me of the famous words of our mutual friend, Col. W. L. Clay, that "You can't inspect quality into a product." Let's see if we can't figure a way to build a little more into our guns in this area.

③  
PHB:jm

cc: R. H. Coleman  
R. A. Williamson-L. Fox  
E. Sapp  
J. P. McAndrews  
E. Sparre  
L. L. Presnell

RECEIVED

APR 17 1968

G. M. CALHOUN

THERE IS A SAFE WAY; DO IT THAT WAY

R2504506

Ilion, New York  
April 2, 1968

R. A. WILLIAMSON  
WORKS MANAGER

ILION QUALITY AUDITS

(Letter P. H. Burdett to E. Sparre, 3-29-68)

Approximately 1% of the firearms produced at the Ilion plant are subjected to a finished gun audit which includes visual inspections, extensive firing and testing for adherence to specifications and Remington quality standards. This sample size gives us 95% assurance that even though a quality problem may evade detection during the various phases of production, gallery testing and final inspection, if the problem affects as few as 1% of any particular model or common sub-assembly, it will be detected by finished gun audit.

Additional auditing or enlarged sample sizes become disproportionately expensive when compared to the expected improvement in the probability of identifying defects.

With the current introduction of new linear measuring machines and data handling systems at the Ilion plant, it is likely that revisions to our quality control system to expand the use of these tools will provide more accurate and extensive quality information. I have asked Lee Presnell to visit the Ilion plant and review our quality program.

L. Fox, Supt.  
P E & C Section

LF:I  
Attach.

### MEASURING GUN QUALITY

In a typical gun produced at Ilion, there are approximately 3000 measurable characteristics. For each of these characteristics, a statistical sampling procedure has been established to assure that components are being manufactured to model drawing tolerances. Approximately 10% of our wage roll labor is expended in measuring these characteristics.

In addition to controlling the characteristics of individual components, sub-assemblies and assemblies are visually inspected and gaged to measure compatibility of components, controllability of assemblies and effectiveness and controllability of the output function of sub-assemblies.

Because of the inter-relationships of components and the large number of characteristics, it is possible for a characteristic to shift from the mean position, still be within gage limits, and cause quality problems. These problems are usually detected at final assembly, during gallery testing or at final inspection. When detected, Production, P E & C and R & D analyze the problem and institute the necessary design or process revisions. This type of action takes place several times each year and keeps most quality deficiencies from the consumer. This action always includes corrections to work in-process and warehouse product.

As a final guard against shifts in physical characteristics which affect product quality but escape detection at the various check points in the production process, P E & C maintains a finished gun quality audit. This finished gun audit provides a random sample of approximately 1% of the finished product.

With the finished gun audit, we have approximately 95% assurance that any previously undetected quality problem which affects as few as 1% of the gun model will be detected and corrected. We have 99% assurance that a gun defect affecting 1% of a particular model will be detected.

To improve the probability from 95% to 97% of detecting a 1% defect rate would require doubling our sample size and increasing finished gun audit cost from approximately \$29,000 per year to approximately \$59,000 per year. Improving the probability to 99% of detecting a 1% defect rate would require quadrupling the sample size and would increase costs to approximately \$116,000 per year.

LF:I