

Remington Arms Co., Inc.  
Lonoke, Arkansas

To: T.C. Douglas

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Subject: July Progress Report

BUNTERS

No new results to report. The experimental CPM REX M-2 and M-4 tool steel bunters have not arrived. Work in determining the state of temper of regular production bunters is inconclusive. It is apparent, however, from working with these bunters and reading a considerable amount of literature on tool steels, that poor heat treatments are extremely hard to discern through hardness measurements and optical microscopy. Most of the microstructural changes that occur during hardening and tempering tool steels, especially high alloy tool steels such as M-2, are too fine to be discerned with an optical microscope. In fact, most of the microstructural changes can be viewed only with a transmission electron microscope ( > 20,000X ). To gain more insight as to what type of microstructural changes can be discerned with the optical microscope, test samples of M-2 tool steel are being heat treated in house for viewing. These samples will also be sent to Ilion, NY for viewing in the scanning electron microscope. This information will yield a better understanding of microstructural changes occurring in these materials, allowing them to be more critically evaluated.

GENERAL

As usual, a large part of last month was spent on day to day projects for other engineers; some of which include:

149 Primers - There has been concern over the sensitivity of 149 primers. As a result, several anvil samples were submitted for metallurgical examination. A thorough study revealed slight differences in the mechanical characteristics of the anvils. However, it does not appear that these differences are responsible for a variance in sensitivity.

Rimfire saw blades - An issue was raised concerning the integrity of saw blades used for rough cutting rimfire shells. Many blades last for only a few hours before needing

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replacement. Since the blades are made by an outside vendor, the material type is not known. A comparison of a "good" blade to "bad" blade revealed a considerable difference in hardness and carbide structure, indicating either poor material or heat treating practices.