

To: T. C. Douglas

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MARCH PROGRESS REPORT

SHOT CHARGER DEVELOPMENT

The counting-type shot-charger design for Duplex Loaders has been released for quotes. A purchase order for the prototype is expected to be released by mid April.

ROTARY CAM BODY FORMER - 410 & 28 GA.

More than 40M corrugated R/C 410 LVTW bodies were assembled thru AH&P, approximately half erroneously with steel heads. Those with brass heads were processed thru the Duplex Loader as Target loads. Roughly 80 % of these were lost due to set-up, poor skiving, machine variances and testing. On the positive side:

- 500 R/C Target loads were field tested at the Lonoke Gun Club comparatively to current product with no noticeable difference
- visual appearance of the assembled shell is as good or better than current product
- function and casualty tests by Ballistics at all temperatures were good. No malfunctions
- Reload tests thru 11 reloads produced no primer seal problems. Body integrity is better than current 3 pc.
- the poor skiving problem was resolved thru cutter redesign

Approximately 1M once fired R/C 410 hulls (with improved skive) were sent to Marketing for distribution to selected shooters for reloading evaluation. These will be reloaded using a variety of Handloading equipment and components for comparison to competitors hulls.

A new run of both R/C 410 and R/C 28 product has been started. These are being planned thru MRP. Roughly 50M corrugated and 250M smooth 410 bodies are scheduled to start thru AH&P 4/2/93. Fifteen thousand corrugated and a portion of smooth are scheduled to be loaded beginning 4/6/93 for Marketing's field test evaluation. Approximately 250M 28 GA. smooth bodies will be started thru Rotary Cam the week of 4/5/93.

data, presumably due to the small sample size which must be used. The small sample will have good contact with the heating unit and hence, good heat transfer measurements.

While resolving the decomposition characteristics, we developed data, which was transferred to manufacturing, regarding gently heating styphnate to kill it in scrap. The TNR and its product styphnate study has not been completed due to an increased interest in TNR itself.

After last month's report, we decided to try to determine why TNR sometimes showed two melting peaks and/or sometimes two decomposition peaks. We repeated the thermal analysis on three of the samples, getting the same doublet decomposition peaks but not the doublet melting peaks. Several infrared scans have been taken of each suspect TNR in our attempt to find a reason. No conclusions have been reached about this, except that we should now go back and look at the TNR chemical process and its raw materials. The TNR crystal structure determines the lead styphnate crystal structure. A generalized primer manufacture flow chart is attached.

Objective B, determination of the homogeneity of the mix as it comes from the mix bowl, is being pursued by F. Whitmore in parallel with our TNR studies.

Over 300M .410 brass caps were run without mouth splits using new steel forming punches and resharpened blanking punches. Although successful, smaller samples of caps using standard carbide and both .0005 and .001 undersize steel forming punches were also run to evaluate sensitivity of the process. These samples will be flare tested to compare effects on ductility. Also, samples of the brass strip and both split and un-split caps from previous tests were sent to an outside lab for material evaluation. Their report is now being reviewed.