

CONFIDENTIAL

2/26/93

To: T.C. Douglas

From: J.H. Coyle *JHC*

Subject: Monthly Report

270 Win 135 gr. ER:

The trial & pilot through loading has been completed and signed off at this time. This item will be dropped.

30-30 Win 160 gr. ER:

The trial & pilot through loading has been completed and signed off at this time. This item will be dropped.

LEADLESS BULLET (Copper):

30 Cal. 165 gr. - bullets made from C110 and C145 have been tested in 30-06 cases for v&p, accuracy, and mush along with Barnes 165 gr. X-bullet with the following results:

Bullet	Velocity (fps)	Pressure (psi x 100)	Accuracy - 3/5's (100 yds)
165 gr. X	2757	591	1.0"
165 gr. (C145)	2612	584	0.7"
165 gr. (C110)	"	"	1.1"
			0.7" - 3/4's

Accuracy on the copper bullets was tested with unsplit noses and split and reformed noses. There wasn't any difference in accuracy in this test.

Mush was shot through 18" of gelatin at 100 yds with the following results:

Bullet	Retained wt.	% wt. ret.	mush dia.	
X-bullet	138 gr.	84	1.4X	
	146 gr.	88	1.6X	
	146 gr.	88	1.6X	
C145 - no split	143 gr.	87	1.1X	
	.050 split	144 gr.	87	1.4X
	.150 split	143 gr.	87	1.3X
C110 - no split	152 gr.	92	1.5X	
	no split	158 gr.	96	1.5X
	.050 split	164 gr.	99	1.6X
	.150 split	158 gr.	96	1.5X
	.150 split	159 gr.	96	1.5X

C110 to date produces the best mush results but accuracy may be a problem where accuracy doesn't appear to be a problem with the C145 material but mush isn't acceptable.

The copper bullets that were tested which had split noses were split and reformed by hand.

Samples of bullets from both materials plus a sample of the X-bullet were sent to Fred Schmidt for analysis. He stated that there is a significant difference in the hardness of the copper bullets and the X-bullet due to the latter being annealed. Further contact will be made for material recommendation.

Since the velocity of the copper bullets is approximately 180 feet too slow, modifications will be necessary to the bullet to obtain more velocity and lower pressure. The first iteration has been modeled to obtain a predicted bullet length for the given weight of the bullet. No bullets have been machined at this time due to machine availability. Bullets will again be made from both copper materials and should be done by 3/10/93.

30 Cal. 190 gr. - bullet has been modeled to obtain bullet length for desired weight but no bullets have been machined at this time. This bullet will follow the 165 gr. bullet.

270 Win 140 gr. - bullet has been modeled to obtain bullet length for desired weight but no bullets have been machined at this time. This bullet will follow the 190 gr. bullet.

#### LEAD FREE P&R TRAINING AMMO:

If this project is pursued by enclosing lead with a disc, in all probability, the current existing 62A frame will have to be rebuilt. Contact tried to be made with two surplus machine vendors; one did not have any 62A and the other had a disconnected phone number with no information on another phone number. It appears that there are no lead-free primers available at this time to use with lead-encased bullets.

#### MISCELLANEOUS:

Preliminary work has started on the 20 ga. sabot. CNC machine is presently set up for the sabot and a sample of approx. 50 pcs. will be made from Lexan by 3/4/93.

Bushings, collets, and .50 dia. copper rod have been ordered for the slug. A program has been written to machine the slug once the sample of sabots are made. A slug sample should be made by 3/15/93.

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