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TO: G. L. Pinckney
 Bridgeport

FROM: W. E. Leek

SUBJECT: M/721 PERFORMANCE AT EXTREME LOW TEMPERATURE CONDITIONS

In answer to your letter of August 29th, 1947, previous testing has shown the following:

1. The ice will not adhere to the parts in question if they are well saturated with Graphite or Remington Oil. However it is not likely that the shooter would lubricate his gun in that section as it is not a functioning part of the gun.
2. The Trigger Guide Plate is used as a spacer only between the Trigger Guard and the Stack. If it is made of a plastic material, I am sure that its use would not introduce difficulties under normal or adverse conditions, and the nature of the material prevents a bonding of ice to its surface.
3. I would not guarantee that the gun would not freeze under 32°F.
4. A M/70 Winchester under similar conditions (-60°F.) will fire the first round. The bolt will not unlock because ice jams between the top bearing lug on the bolt and the recess for this bearing lug in the Receiver.
5. When comparing the Triggers and the space between the Guard and Guide Plate in the M/70 and M/721 respectively, it will be noticed that there is approximately 1/8" more clearance between the Trigger and the Trigger slot in the Guard of the M/70 than there is in the M/721. It may also be noted that the Trigger Pin in the M/70 is located much higher than the M/721, allowing the Trigger to shear ice in that section around the trigger slot in the Guard, while in the M/721 the Trigger and Trigger Guide Plate allow the ice to be in compression. In the former case the ice breaks away and allows the shooter to fire, while in the latter case (M/721) the ice is in compression and prevents firing.
6. Again I would like to stress the point that this ice test was very severe in that water was sprayed directly into the section in question.

If there is any further information needed, please do not hesitate to contact me.

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