September 13th, 1948

TO: H. J. Hackman (10)

FROM: W. E. Leek

SUBJECT: FIRING OF CUSTOMER'S M/721 (30-06) RIFLE, #22066
PROPERTY OF H. J. SMITH, SALT LAKE CITY, UTAH

Test firing of the subject gun has been completed. The ammunition used was of Frankford Arsenal manufacture and of the same lot that Mr. Smith used when he experienced a ruptured cartridge case. Eighteen (18) rounds of the test ammunition was fired without any evidence of escaping breech gas.* The nineteenth and last round fired ruptured longitudinally, extending from the primer pocket down the body of the case about 9/16". This rupture in the fired case was almost an exact duplicate to the one experienced by Mr. Smith. See photographs A and B.

Photograph C shows four powder spots on blotter paper, indicating breech gas and firing pin leakage of powder gas which occurred when the fired cartridge case ruptured. The absorption of powder particles on the blotter paper shows very little leakage of breech gas around the Firing Pin and near the vicinity of the shooter's eye.

The firing of cartridges containing faulty brass as shown in these pictures will cause serious injury to a shooter and permanent damage to conventional Bolt Action Rifles, i.e., those not providing support of the cartridge head. It is the opinion of the writer that Mr. Smith was very fortunate indeed in having a M/721 Rifle as it supported the ruptured case from further expansion. It is possible that a similar condition with a conventional gun would have seriously injured or possibly killed Mr. Smith.

W. E. Leek
Design Section
Technical Department

WEL:MP

*White blotter paper is used in the defective ammunition testing to pick up evidence of escaping breech gas. The paper surrounds the action at a distance of 3". Another piece of blotter paper is placed in a vertical position at the comb section of the stock, comparable to the shooter's eye position. White blotter paper will absorb powder particles comparably with human flesh and is acceptable in U. S. Courts as a practical laboratory material substituting for human flesh.