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Remington Arms Company Inc.  
RESEARCH & DEVELOPMENT TECHNICAL CENTER  
315 WEST RING ROAD  
ELIZABETHTOWN, KY 42701

**3.5.2.3 TLW0300AS – Obstructed Bore Test**

This test is conducted with an obstruction placed in the bore and a standard factory round is then fired in the rifle to determine what damage, if any, might result. To begin the test a rifle bullet is driven into the bore and is located to a position immediately in front of the chamber. A standard factory projectile, in this case a .30-06, 220 grain bullet, is placed in the chamber and the gun is fired using a lanyard. Witness paper is located directly behind the firearm to determine if debris might cause injury to the shooter.

When this test was conducted it was found that the bolt plug assembly separated from the bolt body when the gas escaping into the bolt head and bolt body traveled the length of the bolt body and impacted the bolt plug. The following is from a report issued on the results of an analysis conducted to determine if this might pose a safety issue for the shooter. The analysis determined that given the mass of the synthetic material bolt plug and the velocity of the part along with the requirement that an obstruction also be present in the bore of the rifle is was unlikely to pose a danger to the shooter.

**Test Description: (details & analysis per S. Franz)**

Obstruct bore just forward of chamber with a 220-grain bullet.

Set-up witness papers and shoot high speed movies to capture event.

Shoot a standard factory load with 220-grain bullet under controlled conditions as per high-pressure test procedures.

**Results:**

- Gun # B-20 was tested as per the test Plan. The plastic bolt plug separated from the over molded metal insert and was ejected toward the rear of the rifle. A single sheet of witness paper was set-up behind the rifle perpendicular to the axis of the bore at the butt of the stock. The bolt plug penetrated this paper. The ISS tumbler and detent system broke free from the bolt plug and these parts were found in the room. The magazine box bottom, magazine spring and follower along with the grip cap also exited the rifle. The bolt handle was broken away from the bolt body while trying to open the rifle. The high-speed camera malfunctioned and therefore no movie was captured. Pictures were taken of the setup and the condition of the rifle after firing.
- Since no movie was captured and no estimate of part velocity and energy could be determined another gun was tested. Additional layers of witness paper were set-up at various distances behind the gun so as to better estimate part velocity and energy for this retest.
- Gun # B-10 was tested as per above and no failure of the bolt plug area occurred. The box bottom, spring and follower exited the rifle in a downward direction.

Jan. '01 Trial & Pilot Test Remington M710 Centerfire Rifle;  
R & D Technical Center Project No. 241039; TLW 0300  
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