

September 8, 1916

Army Materiel Command's test in Nan-Yuan Proving Grounds on the new rifle by General Liu Qing-En, referred to as the self-loading rifle ('SLR')

Details of the SLR are as follows:-

Caliber – 7.9mm

Length – 703.1mm

Muzzle Velocity – 780m/s

Weight - 5kg with bayonet attached

Firing rate – 50 rounds/minute

Magazine capacity – 6 round clip internal magazine

The report by Army Materiel Command on the test-firing of Chief Superintendent Liu's SLR goes on to describe the major parts of the SLR (Report also details the test-firing of an anti-aircraft machine gun modeled on the Danish Madsen gun) as follows:-

- i) Muzzle and gas regulator*
- ii) Barrel and Receiver (sliding block)*
- iii) Bolt carrier*
- iv) Operating mechanism (piston, cocking piece, driving spring & buffer spring)*

The SLR is heavier than the average infantry rifle by 1 catty (*Chinese unit of measurement, equivalent to around 604.8 grams during the administration of the Republican government but has been revised by the PRC government to be equivalent to 500 grams*) and consist of a total of 94 parts. Briefly, the self loading mechanism uses gas expelled by the cartridge and as the round leaves the barrel, the muzzle gas trap cap (with three holes for adjustment) starts extending forwards triggering the operating mechanism which moves the bolt carrier rearwards extracting and chambering the next round as well as locking the bolt. When all the rounds are expended, the bolt is unlocked and the loading chamber is exposed. If the user wishes to convert the SLR from 'self-loading' to 'manual' (single shot bolt), he can do so by turning the muzzle gas trap cap clockwise, sealing the cap and seizing the self loading function.

During initial trails, an example of the SLR manufactured by the Han Yang Arsenal was tested and the self loading mechanism seized. According to Superintendent Liu, the fault lies with the driving spring which was hand-made due to a lack of machinery at the arsenal and therefore not up to the required tolerances. Following this, an example of the SLR manufactured in America was tested and went through 6 magazine clips with no issues or stoppages. A rough calculation placed the firing rate at 40 rounds per minute based on a magazine clip of 6 rounds. However there were issues with target acquisition and aiming, although recoil is minimal, the ejection action and gas action at the muzzle gas trap cap

inadvertently causes the muzzle to climb which cannot be negated as the entire weight of the rifle is supported the firer's left arm.

In addition, due to inconsistencies in the propellants of the cartridges fired by the SLR, stoppages occurred when the bolt was unable to lock or when the driving spring engaged too quickly. Another point to note was the tendency of the sliding block receiver to run into the face of the firer, in particular since most of the firers are used to bolt action rifles with action of length 10cm or less. This was no fault of the design of the SLR but emphasis should be placed upon this during training. Further, during manual fire (bolt action), there were instances of "double feeding". Otherwise, the SLR had no faults.

There has been no developments in this nation's firearms for sometime now, Superintendent Liu's effort has been validated both in theory and in practice and the results are promising in the particular the results of the test is impressive. We note that the SLR functions best in repeating fire and although this expends vast amounts of ammunition, there are occasions where this may be called for.

September 13, 1916

Minutes of the Meeting of the Army Materiel Command

The following were discussed:-

- i. The SLR is indeed heavier than the standard infantry rifle.*
- ii. Steel needed for production must be imported.*
- iii. The raw material costs per weapon must cost more than 2 Yuan (currency denomination of the then Nationalist Government) over the current infantry rifle.*
- iv. Whether the muzzle gas trap cap will be affected by dust and dirt and whether it can be turned smoothly and effectively in a battlefield situation is something that can only be addressed when the SLR is in general issue.*
- v. What is the bore erosion rate? For example, German made steel is affected by bore erosion after 5,000 rounds.*
- vi. Will the bolt carrier and sliding bolt overheat and seized?*
- vii. The rear of the SLR is exceedingly long, how will target acquisition and aiming be affected?*

It is resolved that Superintendent Liu conduct further tests at the Officer Cadet School and thereafter modify the SLR accordingly and send them to the infantry unit for field tests along with the requisite manual and instructions. Further, the steel for the manufacture of the SLR should be purchased from Germany or Sweden. As for the ammunition, it should be purchased as the current stock is inadequate and inappropriate. Although we may have the capacity to forge steel and the arsenals have the capability to manufacture ammunition, the competency is far from desirable but can be overcome with further research and development.