

UNIQUE MARKINGS ON CARTRIDGE CASES FROM THE EJECTION PORT OF TYPE 14 NAMBU PISTOL

By: Richard A. Grzybowski, Firearms/Toolmark Examiner, BATF, San Francisco Laboratory Center

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Evidence:

In May 1997, an interesting case was submitted to the ATF San Francisco Laboratory Center for firearms examination. A mint condition Type 14 Nambu pistol, caliber 8mm Nambu, was accompanied by four thoroughly corroded 8mm Nambu cartridges and four fired 8mm Nambu caliber cartridge cases which were also covered with corrosion, rust and soil particles.

Firearm:

There has been very little written in the AFTE journals on the subject of Nambu Type 14 pistols, although they were the most popular Japanese handguns in the Pacific theater during the Second World War [1]. Perhaps the scarcity of 8mm Nambu ammunition would explain the limited use these guns have now. Nevertheless, it is an interesting firearm and it is still being traded in collectors' circles, therefore, a brief historical note is in order.

In 1927, the Imperial Japanese Army adopted the Type Nambu redesigned pistol and designated it Type 14, to signify the fourteenth year of the reign of Emperor Taisho when this pistol was first designed (the year 1925) [1]. It was issued to non-commissioned officers, but commissioned officers had a right to purchase one until the end of the war. The gun was plagued by mechanical problems. First, the long firing pins often broke off. Then, in sub-zero temperatures, they simply froze rendering the gun inoperable. To correct the problem, the manufacturer, Nagoya Arsenal, redesigned the firing pin and the firing pin guide and improved the materials and technology utilized in their production. Leather holsters were adopted to provide a compartment for a spare firing pin. The pistols in early production runs had small trigger guards, later

enlarged to accommodate a gloved hand.

The design, by Kijiro Nambu, an officer in the Japanese Army, was a mixture of the Luger (Parabellum) appearance with a bolt locking, short recoil, mechanism. It was technically difficult and expensive to produce, far exceeding the price of comparable European semi-automatic pistols.

Ammunition:

An unusual 8mm bottleneck rimless cartridge was designed to be fired in Type 14 Nambu pistols. The full metal jacketed bullet was held in a Berdan primed cartridge casing having no head stamp. Muzzle velocity of a standard bullet was measured at about 1050 fps. [1] Most original Japanese ammunition is now primarily owned by collectors and is, therefore, not available on the open market. There are, however, commercial

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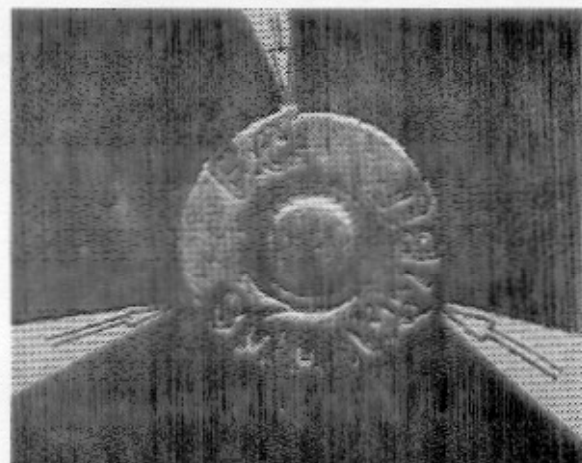


Photo 1: Marks on unfired cartridge from DKT, Inc.

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ammunition loading companies which still have the ability to load this caliber ammunition to the original specifications.

A box of forty (40) cartridges was purchased from DKT, Inc. of Union, Michigan. These cartridges appeared to have been loaded in new, unfired brass, head stamped FC 8mm Nambu. According to DKT, the brass for these cartridges was purchased from Federal where it was made under contract by James Bell (presently of MAST Technology, Las Vegas, Nevada) in the late 1980s. Apparently these cartridges were never loaded by Federal. Instead, Federal sold the brass to smaller independent loading operations. It has been noted that each of the forty cartridges exhibited a crescent shaped mark on the base and some had three, equally spaced (120 degrees) arch shaped marks from the primer to the rim (photo 1). These marks were noted and identified before the ammunition was used for testing and comparison with the evidence from the case.

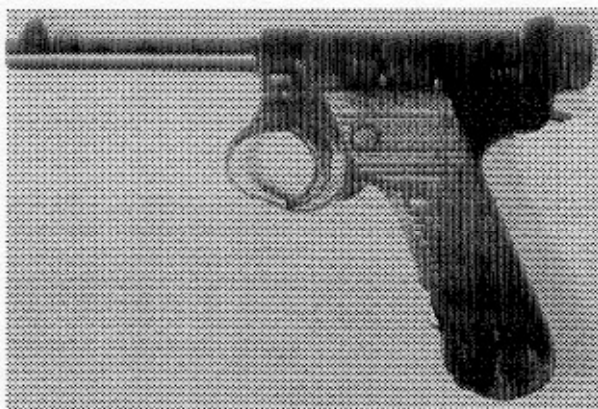


Photo 2: Left side of Type 14 Nambu

Examination:

The Nambu pistol submitted to the laboratory was in excellent condition (photo 2). It appeared to still have the original finish and was corrosion free. The finish still retained a deep blue luster. From the factory markings and reference materials [1], it was determined that this pistol was manufactured at the Toriimatsu factory of Nagoya Arsenal in March 1944. All major components had a segment of the gun's serial number stamped or engraved, including both wood grip panels and the magazine.

The four fired evidence cartridge casings were cleaned of corrosion and examined for firing pin, breech face, ejector, extractor and chamber marks. Except for a wide extractor mark which contained small areas of individual striations, other marks did not display identifying features of sufficient quality. An unusual dent and an impression mark was located on the side wall approximately 8mm from the case mouth. It was oriented at a 90 degree angle to the long axis of the cartridge and in the same relative position as the extractor. These were present on all four fired evidence cartridge cases.

A microscopic examination revealed a unique pattern of irregularly shaped impressed toolmarks. These toolmarks were found to match on all four cartridge casings (photo 3). Their general appearance suggested that they were related to the firing/extracting/ejecting cycle.

The submitted Type 14 Nambu pistol was then examined with particular attention to the ejection port located on the barrel extension as well as the location of ejector and extractor. The ejector is a long piece of steel staked at the bottom of the barrel extension (photo 4). It clears the bolt at 6 o'clock position and makes a long, narrow, horizontal impression on the cartridge case base just below the firing pin mark. The extractor is attached to the upper surface of the bolt just above the bolt face at the 12 o'clock position (photo 4), the same location as found on Luger P08 pistols.

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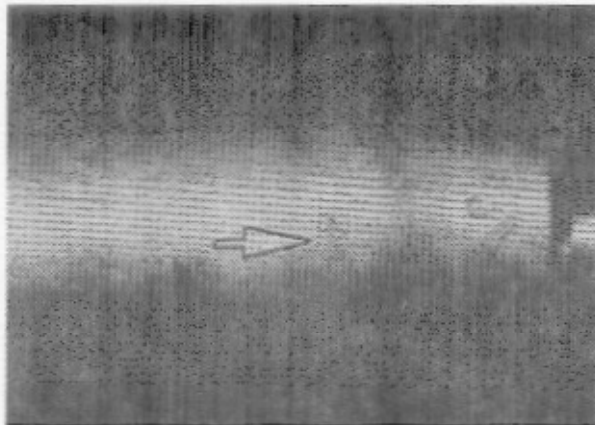


Photo 3: Impressed toolmarks on the side wall of evidence cartridge case

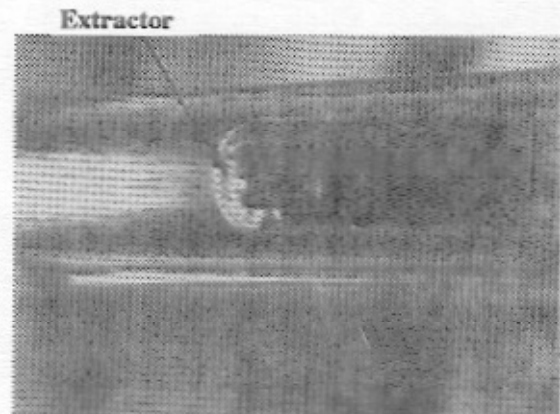


Photo 4: Ejector

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It then became apparent that while in rearward motion, the bolt will extract a fired cartridge case which then will be struck by the ejector and rotated virtually 90 degrees to the back. Since, at that moment, the 12 o'clock (top) rear edge of the ejection port is in very close proximity to the extractor, the sidewall of the casing may come in contact with that edge as it tips over further towards the rear.

A microscopic examination of the top rear edge of the ejection port revealed that it had been finely ground as a part of the finishing process and that randomly spaced and positioned microscopic grooves are formed on the uppermost surface. These surface details could potentially be impressed on a cartridge case during the ejection process (photo 5). This tool working surface possessed no sub-class features and could thus be relied upon to create a unique toolmark.

Before test firing a safety warning is in order. Particular attention should be paid to the pivoting, bolt locking block assembly. It is possible to assemble this pistol without the locking block which locks the bolt until the pressures are safe [2]. In such a case, the pistol would function as in a simple non-delayed blow back mode. Although no published data can be found for the chamber pressure of the 8mm Nambu caliber, the closely related .30 Luger caliber standard loaded cartridge gener-

ates approximately 25,000 cup [3], thus, the firing of this pistol without a properly assembled bolt block is unsafe.

After a safety inspection, the Nambu pistol was test fired in a normal fashion utilizing the ammunition magazine provided, and ammunition from DKT. It was immediately apparent that the relative positioning of the ejector and the extractor, combined with the close proximity of the rear edge of the ejection port, caused the fired cartridge case to be projected forward with greater than expected force.

All of the ejected cartridge cases displayed a small dent on the side wall below the neck, made by the top edge of the ejection port.

Microscopic comparisons between the test cartridge casings revealed the presence of impressions on the side walls that exhibited sufficient agreement of microscopic detail to identify all test cartridge cases as having been fired in the same firearm. Subsequently, the evidence cartridge casings were microscopically compared with test fired cartridge casings at the same side wall location. Although the test impressions were slightly longer than those present on the evidence, the agreement of shape, size, spacing and appearance of the individual impression marks between the evidence and the tests sufficiently established

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that the evidence cartridge casings were indeed fired from the submitted Type 14 Nambu pistol (photo 6).

Conclusion:

The design of and machining process used to finish the Type 14 Nambu pistol has created an additional site for the production of identifying marks on cartridge cases. It can be expected that once such a mark is found on a fired cartridge case, the source of it will, most likely, be the rear top edge of the ejection port. The finishing process used on the barrel extension observed on the Nambu pistol submitted to the San Francisco Laboratory Center confirms that the toolmarks produced by the ejection port are individual and, therefore, if present in sufficient quality and quantity, are suitable for identification.

It must also be remembered that any Type 14 Nambu pistol submitted for examination and test firing should be carefully examined to determine that it is assembled with all parts in place and is safe to fire.

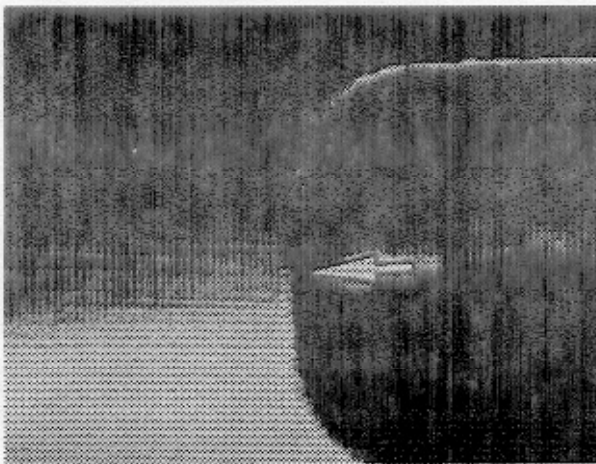
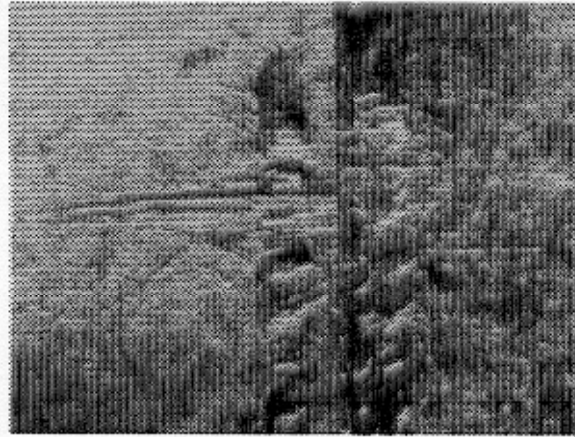


Photo 5: Rear edge of ejection port



Evidence

Test

Photo 6: Comparison of ejection port toolmarks