A. Purpose:

To examine recovered shot pellets and wadding in order to determine the shot size and gauge of the firearm from which these items were fired. This determination can be made by comparing the fired ammunition components, like shot pellets and wadding, with the ammunition components loaded in unfired submitted shotshells. Determination of the shot size or gauge of the firearm may also be determined by comparing the fired ammunition components to submitted discharged shotshells.

B. Responsibility:

Forensic Science Examiners assigned to the Firearms Unit.

C. Safety:

The use of personal protective devices is at the discretion of the analyst.

D. Procedure:

1. Shot Pellet Examination
   a. Determine the total number of pellets received.
   b. Determine the composition of the pellets (lead, steel, bismuth, etc).
   c. Determine the weight of the pellets (either in grains or grams)
   d. Note the pellet condition.
   e. Determine the size of the shot. The following methods may be used:
      i. Compare side by side the evidence pellets with known shot sizes in the laboratory.
      ii. Compare the weight of the evidence pellets to the weight of known standards.
      iii. Using the least damaged pellet specimen, measure the diameter using calipers.
   f. Record the results of the findings in the notes.
   g. The shot size/weight tables in the AFTE Glossary may be useful in determining shot size.
2. Wad Examination
   a. Gauge determination

i. Directly compare the evidence wadding to known laboratory standards of similar manufacture and composition. Do this by comparing the base of evidence to the bases of the standards until a similar size is found.

ii. Measure the base diameter of the wad and compare it to the base diameter of known gauge measurements.

iii. Measurements may be obtained by utilizing calipers or imaging software associated with the comparison microscopes.

b. If evidence shotshells are submitted, it may be necessary to disassemble one of them to determine the gauge or the manufacturer of the unknown component.

c. Manufacturer's data may also be determined by locating information stamped into the wad or by comparing the wad to known laboratory standards.

d. Microscopic examination may reveal striations suitable for identification of the wad back to the shotgun that fired it.

e. Record the results of the findings in the notes.

E. References:

1. AFTE Glossary