Technical Procedure for Acidified Hydrogen Peroxide

1.0 Purpose - This procedure describes how to use acidified hydrogen peroxide (AHP) solution and apply it to specific items of evidence.

2.0 Scope – This procedure applies to brass cartridges and brass cartridge cases.

Note: Cartridges/cartridge cases made of material other than brass shall be processed utilizing the standard non-porous methods described in the technical procedure for **Friction Ridge Analysis and Comparison**.

3.0 Definitions

- Cartridge - A single unit of ammunition consisting of the case, primer, and propellant with one or more projectile(s). Also applies to a shot shell (live round).
- Cartridge case - The container for all the other components which comprise a cartridge (shell casing).
- Brass - (1) an alloy principally composed of copper and zinc in varying proportions, often used in the manufacture of cartridge cases, primer cups, and bullet jackets.
  - (2) A term sometimes used to refer to fired cartridge cases.

4.0 Equipment, Materials and Reagents

- Commercially Prepared Acidified Hydrogen Peroxide
- Hydrogen Peroxide (3% w/v)
- White vinegar (5% acidity)
- Purified water
- Protective gloves and lab coat
- Fume hood
- Glass beaker
- Camera/light source
- Plastic Forceps

5.0 Acidified Hydrogen Peroxide Procedure

5.1 AHP may be used as standalone technique or after superglue and R6G in sequential processing.

5.2 A commercially prepared AHP reagent may be used or the AHP reagent may be made prior to use.

5.2.1 To prepare the AHP reagent, mix 14.1 mL of white vinegar with 20 mL of hydrogen peroxide in a beaker.

5.3 Pour enough AHP into a beaker so that the depth of the AHP is approximately the height of the tallest (longest) item being tested.

5.3 Place the item into the AHP mixture for seventy-five seconds (1 minute, 15 seconds). Do not process with AHP for longer than seventy-five seconds.

5.4 After the items have been exposed to the AHP for seventy-five seconds, neutralize the residual solution on the item immediately by submerging the item in purified water for 10 seconds as a rinse. Allow the item to dry completely.

5.5 Visualize any developed latent prints utilizing ambient or white light.

5.5.1 Preserve the developed impressions using photography, according to the techniques in the Technical Procedure for Nikon Digital Camera. Process the photograph(s) according to the techniques in the Technical Procedure for Image Processing.

5.6 **Standards and Controls** – Forensic Scientists shall produce a self-made test print on a non-coated brass surface to be processed concurrently with items of evidence.

5.7 **Calibration -** N/A

5.8 **Sampling –** N/A

5.9 **Calculations** – N/A

5.10 **Uncertainty of Measurement** – N/A

6.0 Limitations

6.1 This process is only effective in developing latent impressions on brass cartridges and brass cartridge cases. AHP processing is not effective on silver, aluminum, nickel, or polymer coated cartridges/cartridge cases. In addition, AHP resulted in negligible ridge detail on Speer shell casings (gold-colored casings with a silver–colored head stamp center).

6.2 The Acidified Hydrogen Peroxide reagent is a onetime use solution. Discard the used solution after each case.

6.3 The commercially prepared Acidified Hydrogen Peroxide reagent shall be stored in the original shipping container until needed.

7.0 Safety - Acidified Hydrogen Peroxide can be harmful if inhaled or ingested and exposure may cause eye, skin, or respiratory irritation. AHP shall be used in a fume hood when processing evidence and protective googles, gloves, and lab coats shall be worn when handling.

8.0 References-

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9.0 Records – N/A

10.0 Attachment – N/A

Revision History		
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