



# Recovery of Fingerprints from Discharged Cartridge Cases

**C**ARTRIDGE

**E**LECTROSTATIC

**R**ECOVERY

**A**NALYSIS

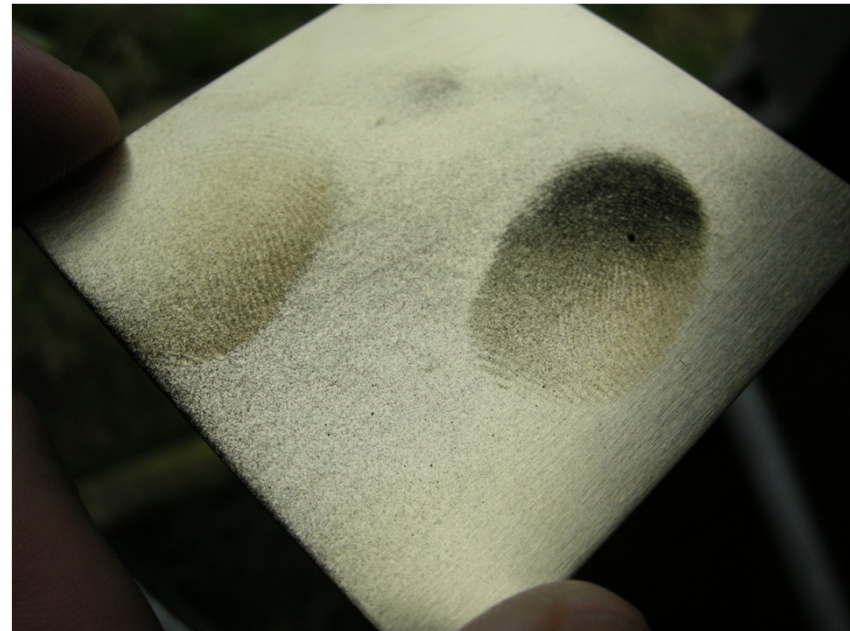
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# What is CERA?

3 years ago Dr. John Bond of UK Northamptonshire Police made the discovery that fingerprints can be recovered from brass and therefore discharged cartridge cases (DCCs).

CERA is the automation of that process which allows laboratory technicians to reliably and repeatably carry out this work with the added capability of capturing a seamless image from the circumference of the cartridge.



# The Crime Scene

DCCs are often gathered at the crime scene with little hope of recovering evidence. If prints are available then they are often from handling DCCs after the weapon has been fired. DNA is the evidence most often recovered and even this is rare.



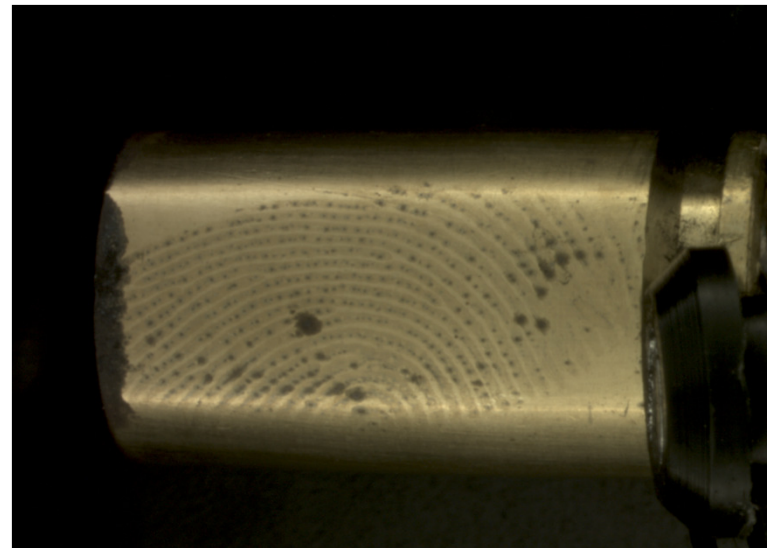
CERA increases the chance of recovering evidence from the DCC.



# The Process

By applying a high potential to the DCC an electrically charged powder preferentially adheres to the corroded area left by the fingerprint sweat. This corrosion can remain indefinitely as it is literally etched in to the brass.

CERA uses this phenomenon to reveal and image the prints.



# The Machine

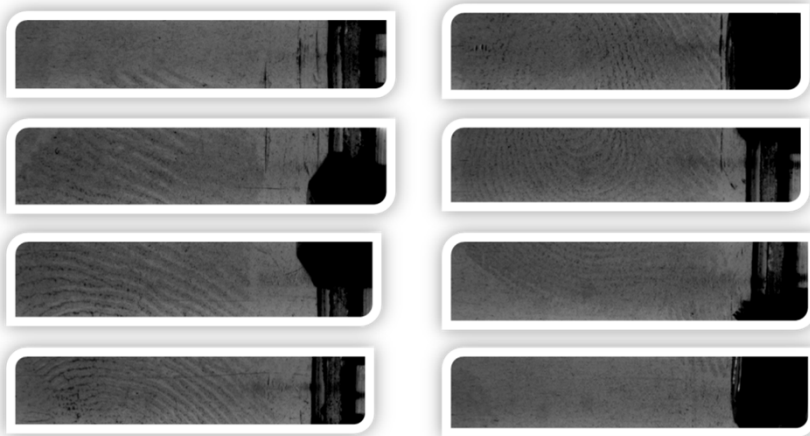
- Holds 0.22" rim fire to 12 bore shotgun DCCs
- Measures the cartridge size
- Applies the powder
- Illuminates the DCC
- Captures high res images



# The Software

Consolite Forensic Imaging Software (CFIS).

The software takes images from the circumference of the DCC and stitches them together to form one continuous image. CFIS can provide image enhancement and has a full audit trail.



# Availability

- CERA is available for purchase now
- Price for the full package is under £50,000
- Installation and training is simple and takes only one day
- Contact us for a formal quotation



# Frequently Asked Questions

How long after the weapon is fired will the corrosion remain?

It will remain until it is mechanically removed. For example the following will affect the mark:

Brass polishing compound is a fine abrasive and so will remove or reduce the print.

Handling of the corroded area will effectively polish it, as well as potentially adding further masking corrosion.

Regular cleaning will eventually remove the mark.

In short if the sample is treated gently and handled minimally the mark will be preserved indefinitely.

Does the sample require any preparation?

The cartridge is best cleaned gently with soapy water, alcohol cleaner and then distilled water. The corrosion will remain.

When in the evidence analysis chain should CERA be used?

CERA can be used at any stage, but both DNA and gunshot residues could be contaminated if not recovered first.

Fingerprints visible through cyanoacrylate fuming will be removed by cleaning and so this should also be carried out first.

The cyanoacrylate powder can simply be removed to reveal any corrosion. Handling by ballistics can be quite thorough so the CERA process should be used before ballistics.

# Frequently Asked Questions

Does the process damage the cartridge?

The act of applying a high potential to the cartridge has been shown not to change the ballistic properties. The sample holder is made from plastic so should not mark the ejector groove of the sample and there is a protection system which will not allow the sample holder to be overtightened.

What happens if too much powder is applied and therefore the mark over exposed?

The powder can simply be removed by re-cleaning the cartridge and then it can be re-processed.

How much is the installation?

The installation cost varies according to the location of the facility.

How long does the training take?

The training can be completed in one day and is best carried out at the time of installation. Additional training days are available upon request.

# Frequently Asked Questions

## What does the package contain?

There are a number of variables but the best all round package contains:

1 server grade computer

1 high resolution monitor

1 CERA Mk.II

1 Lighting pack (contains white light and fluorescing light pack)

1 Filter pack (contains contrast enhancing filters for imaging fluorescent marks)

1 Universal sample holder

1 Powder starter pack

## Is operator training included in the price?

Shipping, installation and training are not covered in the basic price and will be quoted according to requirements.

## What ongoing costs will there be?

Consumables in the form of extra powder will be available. Powder is recaptured and recycled but after 10 cycles we recommend replacing it. There will be an annual charge for software support and upgrades.

# Frequently Asked Questions

## Can I supply my own computer?

Due to the complexity of modern software all systems will be supplied with a server grade computer and all of the CFIS software installed on it. This way the software and interface with the supplied monitor can be tested in full before delivery.

## Can I purchase the machine without the software?

The CFIS software is a vital and integral part of the CERA system. Producing the mark is only the first stage. The powder can enhance the print and the powder can be fixed on to the cartridge but this inhibits further ballistic examination so it is not a popular approach. The cartridge is best processed and then the image captured to preserve the evidence for future scrutiny, allowing for further ballistic examination if required.

## Is the system portable for field use?

The system is portable as it weighs less than 25kg (60lbs). The system could then be linked to a laptop with high resolution screen. However, due to the size of the sample likely to be tested it may prove simpler to take the sample to the machine rather than the other way around

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