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DIRECT AMMUNITION RECOVERY TECHNIQUE

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WHAT IS DART?

DART was launched early in 2020 by Eurofins Forensic Services and is an ISO 17025 accredited technique for the recovery of DNA from both fired and unfired cartridges up to and including 9mm calibre.

DART is also suitable for use on certain other non-porous items, please click on the link below for more information.

1 CASE STUDY

2 CASE STUDY

3 CASE STUDY

Since its launch there have been a number of cases submitted for the DART service by police forces that have resulted in a successful outcome: Click opposite to read a case study.

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NON-POROUS ITEMS

In addition to ammunition, DART can also be utilised to improve the recovery of DNA from other non-porous items.

STEEL AND ZINC PLATED STAPLES

COPPER/PLASTIC WIRE TWISTS

PLASTIC CABLE TIES

NANO SIM CARDS

ALUMINIUM SCREWS

SILVER PLATED EAR STUDS

Your reporting scientist will recommend using DART on these types of items listed above, if deemed suitable and appropriate for the case.

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DART VS TRADITIONAL SWABBING
SUCCESS RATES

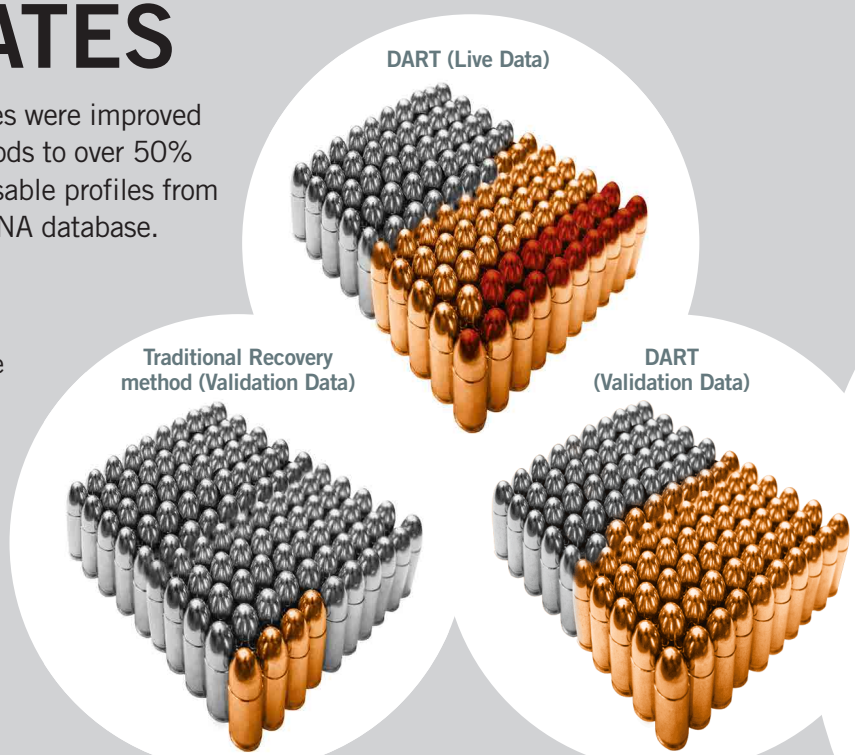
Our studies have shown that success rates were improved from 4% using traditional recovery methods to over 50% using DART. Since launch, 34% of the usable profiles from live case samples were loadable to the DNA database.

DART (Live Data)
- **53%** Usable DNA Profiles*

*Of the usable DNA profiles (34% were suitable for loading to the DNA Database)
- **47%** No Profile/Unusable Result

Traditional Recovery method (Validation Data)
- **4%** Usable DNA Profiles
- **96%** No Profile/Unusable Result

DART (Validation Data)
- **58%** Usable DNA Profiles
- **42%** No Profile/Unusable Result



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No profile/ unusable profile

Useable profile

Profile loadable to the National DNA Database

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CASE STUDY 1: POSSESSION OF A FIREARM

Ammunition Type: 9mm

Overview: A vehicle was stopped and a search conducted by Police Officers. The occupant of the vehicle was found to have a firearm concealed on their person. The firearm was recovered and swabs taken directly from the weapon; ammunition was also recovered from inside the firearm and submitted to Eurofins Forensic Services for analysis using DART.

Result: One of the samples yielded a mixed DNA profile from which it was possible to obtain a partial profile suitable for loading to the National DNA Database.

CASE OUTCOME: This profile provided intelligence information which has enabled the investigation to be progressed further.

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CASE STUDY 2: AGGRAVATED BURGLARY IN A DWELLING

Ammunition Type: .22 air rifle pellet

Overview: Early in 2020 an elderly individual was shot by an intruder in their home. The scene was searched and an air rifle pellet was recovered. The pellet was submitted to Eurofins Forensic Services for DNA processing using the DART technique.

Result: The pellet generated a single source profile which was loaded to the National DNA Database and subsequently generated a match against the suspect.

CASE OUTCOME: This result greatly assisted with the investigation as the suspect had no legitimate access to the property. The presence of their DNA on the pellet therefore provided an extremely strong evidence to link the suspect to the inside of the property.

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CASE STUDY 3: ATTEMPTED MURDER

Ammunition Type: Unconfirmed

Overview: When searching the scene of an attempted murder, CSIs retrieved five spent cartridges which were recovered for DNA profiling. The ammunition was submitted to Eurofins Forensic Services for analysis using DART.

Result: Mixed DNA profiles were obtained from each of the cartridge cases and, following scientist review, three female profiles were determined. Two of these profiles were suitable for loading to the National DNA Database and the third profile was deemed suitable for a one off speculative search. Also, one of the 'female' profiles was clearly present across the multiple mixed profiles. One of these profiles has since generated a match.

CASE OUTCOME: This incident was one of a number of shootings associated with an organised crime gang. The result gave the investigators useful intelligence.

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DART KITS

DART Evidence Recovery Kits are now being produced by SceneSafe and are available for purchase from EFS. These kits will maximise the chance of success by removing the need for swabbing at the scene or at an in-force recovery unit and alleviate the need for traditional sample preparation in advance of DNA profiling.

Details can be obtained from your EFS Account Manager or by contacting the Customer Contact Centre.

Click the contact us link below.

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FOR FURTHER INFORMATION ON DART, PLEASE CONTACT YOUR ACCOUNT MANAGER OR CALL THE CUSTOMER CONTACT CENTRE ON:

+44 (0)844 2641 999

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DART - FREQUENTLY ASKED QUESTIONS

HOW SHOULD I SUBMIT THE AMMUNITION FOR DART?

The ammunition should be placed directly into the tubes contained within the DART kit. NB do not swab the ammunition. If kits are unavailable, place the ammunition within inner packaging (e.g. universal tube) prior to sealing it in a tamper evident bag to minimise the loss/transfer of DNA from the exhibit to the inside of the bag. Ammunition must be packaged individually with clear instructions provided as to which service(s) is required i.e. DART, GSR or both.

HOW DO I SUBMIT THE AMMUNITION FOR DART IF GSR ANALYSIS IS ALSO REQUIRED?

GSR recovery needs to be carried out before DART, as any residue will be lost during the DNA recovery process. If the GSR recovery can be carried out within force then the GSR swab should be taken prior to packaging the ammunition for DART. If it is not possible to do this within force, the casing should be submitted to the EFS firearms team in Leeds for GSR swabbing (fired cartridges must not be sent to Tamworth where trace GSR is performed), the cartridges will then be transferred to the DNA Unit for DART and the GSR swabs can be submitted for analysis or returned to force as required. If numerous casings have been recovered, an alternative approach would be for a representative sample to be submitted for GSR and the remainder for DART. Please contact the firearms team in Leeds for advice in this scenario.

WHAT IF MY AMMUNITION IS UNSUITABLE FOR DART?

If ammunition is deemed unsuitable for DART e.g. mis-shapen or too large to fit in the tube, the items should be packaged as standard and submitted to the firearms team for swabbing.

CAN I SUBMIT LIVE/UNFIRED AMMUNITION FOR DART?

Yes, please state on the paperwork whether it is fired/unfired to ensure the appropriate conditions for transport and storage are followed.

WHAT IS THE MAXIMUM SIZE FOR ANY NON-POROUS ITEMS?

Items are suitable for DART if they weigh at least 1g and are up to 9mm in diameter and are no longer than 25mm in length.

WHAT IS THE TRT FOR DART?

DART is a bespoke method and the TRT will therefore be on a case-by-case basis. Results will usually be available within 2 weeks of submission; a verbal result may be available sooner in urgent cases if agreed in advance with the Reporting Officer. We understand that in many cases the ammunition will need to be sent to NABIS following the DART process. We are happy to discuss these arrangements on a force by force basis and will be able to return the ammunition for submission to NABIS within a week.

CAN FINGERPRINTS BE RECOVERED FROM AMMUNITION AFTER DART?

The DART process is destructive to the sweat and oils which are required to detect fingerprints using traditional methods. A decision therefore needs to be made as to which evidence type will be more informative to the investigation. It is understood however, that there are some techniques which can detect the corrosion caused by fingerprints on ammunition and these are considered to be unaffected by the DART process.

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