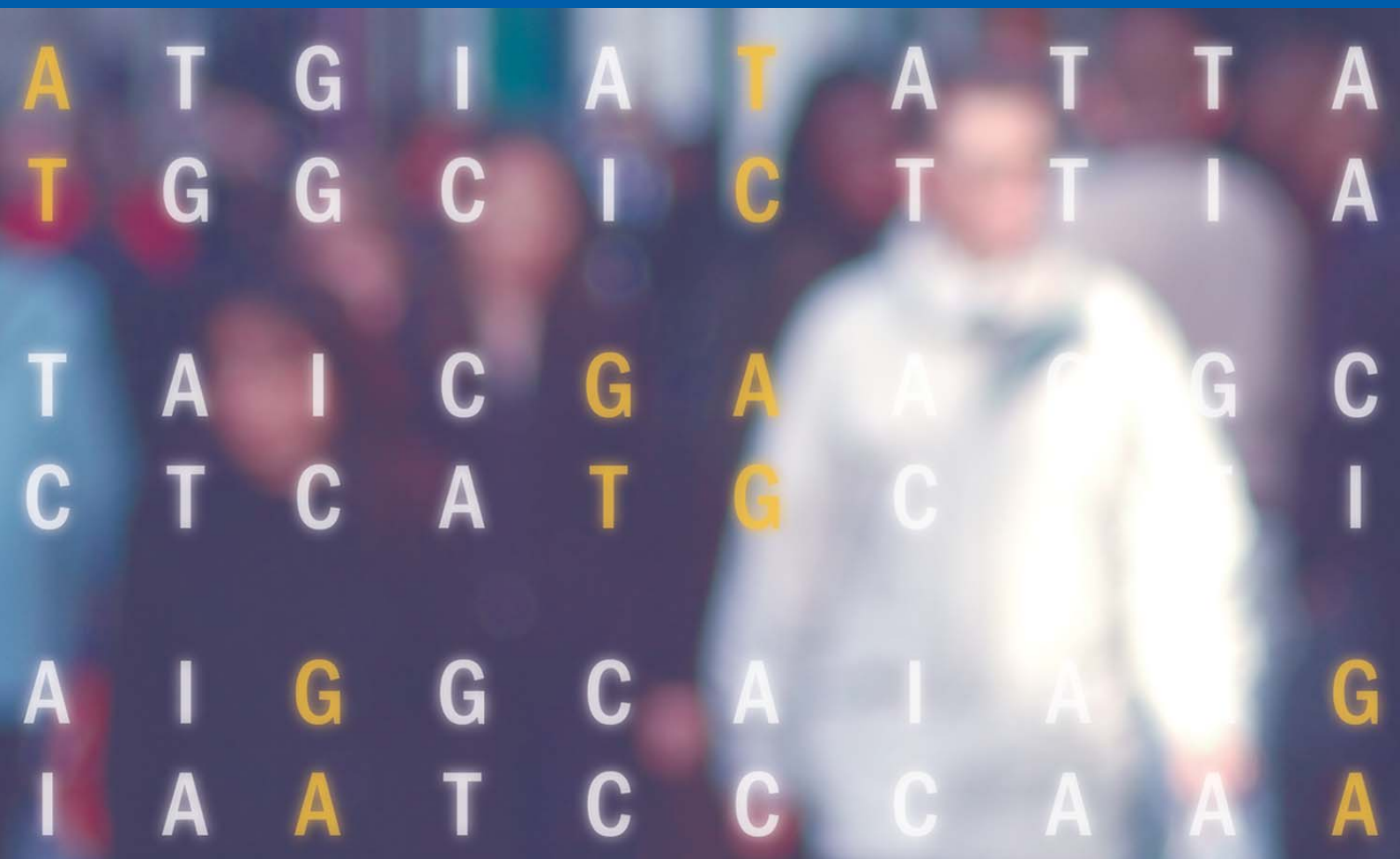


The National DNA Database
Annual Report 2005-2006



Strategic Objectives

1. To establish independent oversight of the National DNA Database

- Provide for independent oversight with lay input
- Separate the Custodianship of the National DNA Database from the FSS
- Establish a coherent National DNA Database management group
- Provide an even-handed service to all police forces and supplier laboratories

2. To obtain DNA profiles from the active criminal population

- Secure support from the Home Office for the police and the Database working in partnership with Government
- Maximise sampling opportunities
- Ensure retention of DNA profiles in line with current legislation and policies
- Minimise unnecessary replicate sampling

3. To maintain public confidence in the security and integrity of the National DNA Database and its use

- Ensure compliance with all relevant legislation
- Establish arrangements for obtaining independent advice on ethical matters
- Protect the DNA samples and information on the Database from unauthorised access and use
- Improve the systems for minimising and rectifying erroneous information on the Database
- Formulate and communicate our strategy and plans
- Publicise the value of the Database
- Subject ourselves to scrutiny and audit
- Provide for public access to appropriate information

4. To improve the use and effectiveness of the National DNA Database

- Increase police awareness of the benefits and cost-effectiveness of DNA in the prevention and detection of crime
- Provide comprehensive management information on police, supplier laboratory and Database performance
- Pursue improvements to improve the speed of delivery and scope of Database services
- Encourage opportunities to derive more intelligence information from the Database
- Capitalise on the potential synergy between the DNA and other intelligence databases

5. To develop use of the National DNA Database in partnership with other agencies in the Criminal Justice System

- Build long term partnerships with the key players (ACPO, police forces, Home Office, PITO)
- Improve the services we provide through joining up our systems with those of our CJS partners
- Establish facilities for the identification of missing persons and victims of mass disasters

6. To enhance the position of the National DNA Database as the world-leading DNA Database

- Maintain up to date knowledge of DNA and databasing technology
- Participate fully in international developments in the use of DNA databases
- Influence development of cross-national standards and protocols
- Provide our full contribution to an international service

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Chairman's Foreword



The National DNA Database (NDNAD) continues to provide invaluable assistance to the police service in solving some of the most serious crimes committed. The Database itself is the largest of its kind in the world and plays a crucial part in the criminal justice process. Rarely a week goes by without serious crimes being solved which were committed many years previously, and the importance of these events to victims should never be underestimated.

Last year, I reported that following the recommendations of the McFarland Review (July 2003) work had started on separating the Custodian activity from the Forensic Science Service (FSS) as it became a Government owned company (GovCo). Following this transition, the governance arrangements of the Board have also changed and a new NDNAD Strategy Board is now in place to ensure an even higher standard of supervision and control.

This new Board is made up of representatives from the Association of Chief Police Officers (ACPO), the Home Office and the Association of Police Authorities (APA). There are additionally two non-Executive members drawn from the Human Genetics Commission (HGC) and we are close to appointing members of an Ethics Group who will further advise the Board on matters relating to use and development of the Database.

The Home Affairs Select Committee report "Forensic Science on Trial", published on 25 March 2005, made numerous references to the Database and included recommendations for its development. I feel it is important to ensure that the NDNAD continues to operate with high standards of security and reliability and that we continue to acknowledge the sensitivity of managing the Database. The contributions of the HGC members, and in future the Ethics Group, in terms of advice and comment on the use and development of the Database are thus of enormous importance.

More than 50 Parliamentary Questions were asked about the NDNAD during 2005-06. The main issues were the number of people whose profiles were held on the Database; the number of profiles held by ethnic origin, age and geographical

area; and how many of the profiles related to people who had not been convicted or charged. Full details of the Parliamentary Questions are held on <http://www.publications.parliament.uk/pa/cm/cmhansrd.htm>.

This annual report details the progress we have made in achieving our stated strategic aims and we acknowledge there is still further work to do, to improve the potential of this vital intelligence facility. As Chairman of the NDNAD Strategy Board I hope that you will find this report informative and helpful in terms of understanding the power and use of the Database for combating, detecting and preventing crime.

The existence of serious and organised crime and its potential for causing significant economic harm, as well as harm to individuals, should not be underestimated. We are therefore working with Member States and law enforcement agencies to develop protocols and systems to allow the safe and ethical sharing of DNA data. Since last year, the United Kingdom, as part of its Presidency of the European Union, held an international conference to promote opportunities for maximising the sharing of forensic intelligence on an international basis. Whilst strict adherence to information and data handling, law and protocols of the respective Member States was discussed, the conference itself acknowledged the importance of sharing data to solve crime committed by those criminals who travel across international borders.

The NDNAD Strategy Board has an explicit responsibility to ensure that the hard earned high reputation of the Database is retained and preserved and that any such development is managed in a careful and professional manner. It is important in this respect to stress that the taking and use of DNA samples in the United Kingdom is governed and controlled by strict legislation and the reputation of the Database relies on complete compliance with the domestic law and policies developed over time.

Achieving and maintaining high standards of analysis by the suppliers of DNA services and managing the development of the Database in a way so as to ensure its full potential is achieved will almost certainly fall in due course to the role of a Regulator which has yet to be created. I recognise the importance of this role and strongly support its establishment as soon as possible.

Finally, I should like to add my thanks to Dr Bob Bramley, the outgoing Custodian of the NDNAD, to Dr Mike Prior, the new Custodian, and to all of their team who work so hard to deliver a high quality of service in managing the Database. I should also like to welcome David Money (Chair of the Devon and Cornwall Police Authority) as the APA member on the NDNAD Strategy Board.

Chief Constable Tony Lake
Lincolnshire Police
Chairman of the National DNA Database Strategy Board

September 2006

Governance Arrangements for the National DNA Database

National DNA Database Board

Chairman

Mr Tony Lake, Chief Constable, Lincolnshire Constabulary

Members

ACPO Representative:	Mr Stuart Hyde Assistant Chief Constable (Crime), West Midlands Police
Home Office Representative:	Mr Tim Wilson ¹ , Head of Home Office Science Policy Unit
APA Representative:	Mr Kerry Curtis ² , Avon and Somerset Police Authority,
Secretariat:	Ms Katrina Morton, Detective Inspector, Lincolnshire Constabulary

¹ Mrs Lyn Fereday, Home Office Forensic Science Policy Unit, replaced Mr Tim Wilson from October 2005

² Mr Keith Manning provided interim cover for Mr Kerry Curtis throughout the year and Mr David Money replaced Mr Kerry Curtis as the APA representative towards the end of the year

Lyn Fereday is an experienced forensic scientist having attended scenes of crime and reported all types of biology cases. She was involved in setting up the first DNA profiling unit within the FSS and also the NDNAD when she worked in the joint FSS/Police implementation group. Her responsibilities covered all aspects of DNA support services, the NDNAD Custodian services and advising Senior Investigating Officers on all aspects of forensic science.

In January 2003 she was seconded to the Home Office, initially as the manager of the DNA Expansion Programme and since April 2005 as the Forensic Integration Strategy (FIS) manager. The FIS aims to enable the police to optimise the use of forensic science, extending the success with DNA to all forms of forensic intelligence, in order to increase the level of detections. It will include the expansion of other forensic databases and the evaluation of police use of forensic techniques. In December 2005 Lyn transferred to the Home Office and is now acting Head of the Forensic Science and Pathology Unit.

Lyn is currently Chairman of the European Network of Forensic Science Institutes (ENFSI) DNA Working Group and represents ENFSI on the Interpol DNA Monitoring Experts Group.

David Money's early career was spent in the electrical and electronics industry. He then took up lecturing appointments in Further and Higher Education and went on to work in the Middle East for an international company.

Since returning to the UK, he has held numerous senior appointments in education and educational administration, and has again worked in the Middle East in addition to many European countries.

David has served as a magistrate and has been a member of the Board of Visitors of one of the country's largest prisons. He has a particular interest in penal education and youth issues, and has served on national committees working with government and national agencies. He has also voluntarily chaired Independent Complaint Reviews for Health Authorities.

As an independently appointed member of Devon and Cornwall Police Authority, David has served on all of the Authority's major committees. He also undertakes commitments on the national stage as a member of the APA. He chairs the Authorities Science and Technology Policy Group and serves as a member of the national Forensic Science Procurement Group and ITC Structures Group. He joined the National DNA Strategy Board earlier this year.

Introduction

Governance arrangements for the NDNAD have been revised to reflect the change of status of the FSS and in response to calls for increased accountability and ethical oversight. The Forensic Science Service ceased to be a Home Office Agency and became FSS Ltd, a Government-Owned Company (GovCo) on 5 December 2005. At that point, the Custodian role previously held by the FSS and the responsibility for the delivery of National DNA Database services transferred to the Home Office. In due course, the Custodian role will be subsumed within a new Regulator role that is being developed to oversee all forensic science standards (see p7). Where this role will be located is still under consideration, but the responsibility for delivery of NDNAD services is likely to be relocated within the National Police Improvement Agency (NPIA).

Governance Framework National DNA Database Board

The NDNAD Strategy Board provides governance and oversight of the operation of the NDNAD. It is chaired by the ACPO lead on forensic science, Chief Constable Tony Lake, of Lincolnshire Constabulary, and is comprised of representatives of the APA, the Home Office and ACPO. The Custodian of the NDNAD, a representative from ACPO (Scotland) and a Commissioner from the Human Genetics Commission (HGC) also participate in all meetings.

The NDNAD Strategy Board is accountable to Parliament through its Home Office membership, and decides on matters of policy and the strategic development of the NDNAD to maximise its value to the criminal justice system.

The Board held five meetings during the year.

Ethics Group

The HGC representative, Professor Steve Bain, is currently the principal advisor to the NDNAD Strategy Board on ethical matters, although wider consultation may be undertaken on specific issues, with the Information Commissioner for example. In addition, steps are now under way to increase the

HGC representation at Board meetings to two advisors and to set up an independent Ethics Group to allow advice on ethical matters to be drawn from a wider audience. The opportunity was taken at a meeting with the Nuffield Council earlier this year to explore this development further.

The Board has discretion over whether or not to act on any advice provided on ethical matters by its HGC advisor(s), and will have similar discretion in due course in respect of advice provided by the Ethics Group. However, the decisions of the Board will be made available on the Home Office website together with any views from the Ethics Group on the issues discussed by the Board.

National DNA Operations Group

The National DNA Operations Group is chaired by the ACPO representative on the Strategy Board, Assistant Chief Constable Stuart Hyde, of West Midlands Police. Membership of the Operations Group includes representatives of the Home Office, police force Scientific Support Managers and the organisations supplying DNA profiles to the NDNAD. The Group provides a forum for debate on operational DNA issues and for informing the Strategy Board as required.

The Operations Group held four meetings during the year.

National DNA Database Suppliers Group

The Suppliers Group is chaired by the Custodian and consists of representatives of all accredited organisations supplying DNA profiles to the NDNAD. Prospective suppliers are also invited to participate. The Group promotes communication on scientific and procedural matters related to the collection, preservation and analysis of DNA samples, and the submission of profiles to the NDNAD. Through the Custodian, the Suppliers Group also provides advice to the Strategy Board on scientific standards and developments.

Two meetings of the Suppliers Group were held during the year.

Development of the Custodian Role

The Custodianship of the NDNAD was awarded to the FSS in 1995 for a period of 5 years, under the terms of a Memorandum of Understanding between the FSS and ACPO, as set out in Home Office Circular 16/95. The FSS acquitted its responsibilities through the role of its Chief Scientist. The Memorandum of Understanding was revised twice, in 2000 and 2003, but the Custodianship remained with the FSS.

ACPO Statement of Requirements

Following the change in status of the FSS and transfer of the Custodian role to the Home Office, the Memorandum of Understanding was replaced by an ACPO Statement of Requirements covering essentially the same areas of accountability, standards, quality assurance and the services to be provided. The Statement of Requirements is supported by the NDNAD Strategy Board, and the Home Office has formally agreed to meet them as part of the constitutional arrangements of the Strategy Board.

The Custodian and the Home Office Delivery Unit

The Custodian heads up a team, the Home Office Delivery Unit (Fig.1), which currently sits within the Home Office Forensic Science and Pathology Unit. It is envisaged that in due course it will be relocated within the new National Policing Improvement Agency (NPIA), reporting to Chief Constable Peter Neyroud, currently Home Office Director of Police Information, Communications and Technology and NPIA Chief Executive Designate.

The Custodian is accountable to the NDNAD Strategy Board for ensuring that all profiles added to the NDNAD are reliable and compatible, for the provision of efficient and effective services from the NDNAD and for the development of the NDNAD and the services provided.

The standards and procedures for the supplier laboratories are set by the Custodian. The reliability and compatibility requirements are ensured by the Delivery Unit through a comprehensive regime of accreditation of new supplier laboratories and their on-going performance monitoring against the specified standards and procedures. This latter includes the supplier laboratories having to be accredited independently and audited by the United Kingdom Accreditation Service (UKAS) against the international quality standard for testing laboratories ISO 17025 and the participation of the laboratories in a quality assurance programme of declared and blind trials managed by the Delivery Unit.

Maintenance of the National DNA Database and the Provision and Development of National DNA Database Services

The maintenance and development of the NDNAD, and the delivery and development of operational services from the NDNAD, have been outsourced under the terms of a contract which is overseen and managed by the Delivery Unit (see fig.1).

In order to ensure continuity of performance during the period of change, this contract was awarded by the Home Office to the FSS Ltd, for an initial period of three years. Thereafter, it may be put out to wider competition.

The Regulator Proposal

The longstanding Custodian, Dr Bob Bramley, retired from the Home Office at the end of this year. His place has been taken on an interim basis by Dr Mike Prior, the former NDNAD Manager. The Custodian role will have a strong relationship with the proposed new Quality Regulator for forensic science. The Custodian's responsibility for delivery of NDNAD services and maintaining the integrity of the Database will however reside within the NPfA.

The need for quality regulation arises, partly out of the change in status of the FSS and commercialisation of the market for provision of forensic science services to the police. The future

role of the Regulator builds on the success of the custodianship arrangements to date for the NDNAD and the recommendations from a number of review bodies, most recently the House of Commons Science and Technology Committee, for more independent and transparent governance arrangements for the NDNAD.

Regulation will ensure that standards are set and support them being maintained, thus helping to maintain public confidence in forensic science. It will also ensure a level playing field for all providers of forensic science services and provide support to the police in the procurement of forensic science services that are fit for purpose.

It is envisaged that the Regulator will identify and ensure that arrangements for standard setting and performance monitoring are appropriate and in place.

Regulation will include:

- oversight and control of all forensic science intelligence databases, beginning with the NDNAD and the National Forensic Firearms Database, but extending to others in due course;
- accreditation of those supplying forensic science services to the police; and
- provision of advice to the Government and police service on matters related to forensic science.

The exact scope and function of the Regulator will be developed in more detail through consultation with stakeholders and current regulators

Figure 1



Legislative and Policy Changes

The law and policy relating to the use of DNA has changed significantly over the years and continues to change.

England & Wales

Criminal Justice and Police Act 2001

Prior to 2001, section 64 of the Police and Criminal Evidence Act 1984 (PACE), as amended by the Criminal Justice and Public Order Act 1994 (CJPOA), specified that if a person was either acquitted of an offence for which they had been prosecuted or the charges were dropped, any DNA sample and data derived from the sample had to be destroyed. Section 82 of the Criminal Justice and Police Act 2001 (CJPA) amended PACE so as to remove these requirements on the police. This amendment arose following decisions in the Court of Appeal relating to two cases (R v B and R v Weir) where compelling DNA evidence, initially from the NDNAD, that linked one suspect to a murder and another to a rape, could not be used, and neither man could be convicted, because at the time the matches were made both defendants had either been acquitted or a decision had been taken not to proceed.

The measures contained in the 2001 Act which amended section 64 of PACE have since been challenged by way of judicial review, but in July 2004 the House of Lords found in the case of R v Chief Constable of South Yorkshire (ex parte S and Marper) that they were proportionate and justifiable and not in breach of the European Convention on Human Rights.

The case of S and Marper has now gone to appeal in the European Court of Human Rights.

Criminal Justice Act 2003

From 5 April 2004, Section 10 of the Criminal Justice Act 2003 (CJA) amended PACE to allow the police to take a DNA sample from all persons arrested for a recordable offence and detained at a police station, regardless of the outcome of the case. Those against whom it is decided to take no further action are known as "CJ Arrestees" (see p14).

Serious Organised Crime and Police Act 2005

Section 64 of PACE restricted use of the NDNAD to purposes related to the prevention or detection of crime, the investigation of an offence or the conduct of a prosecution. Where a person died of natural causes, or as a result of a disaster such as the tsunami in South East Asia at the end of 2004, it was therefore not possible to use the NDNAD to help identify the deceased

person's body or body parts. This position was remedied through implementation of subsection (7) of section 117 of the Serious Organised Crime and Police Act 2005 (SOCPA), which amended section 64 of PACE to enable profiles from DNA samples taken from any deceased persons to be checked against the NDNAD for identification purposes, irrespective of whether there is any suspicion of their involvement in a crime.

This amendment to section 64 of PACE came into effect on 7 April 2005.

Prohibition on the Use of DNA taken under PACE for Paternity Testing

Requests are occasionally made to the police, or suppliers of forensic science services, for access to a DNA sample taken under PACE or provided voluntarily, or for the profile from such samples held on the NDNAD, to assist with determination of the paternity of a child in civil cases. Use of the samples or profiles for this purpose is expressly prohibited under the terms of section 64 of PACE.

In the case of *London Borough of Lambeth v S, C, V, and J (No 3)*, the Family Division of the High Court considered whether a family court could order that such a sample or DNA profile derived from it could be used for a purpose not within the meaning of section 64 of PACE. In a judgement given in February 2006, Mr Justice Ryder held that "The purposes to which samples may be put are described in section 64 of the Act. They are specific and narrow." Furthermore, "The establishment of parentage by use of samples seized and retained by the police is not a purpose authorised by Parliament."

Guidance to Chief Officers of police forces, based on this judgment, has now been provided through Home Office Circular 1/2006.

Retention Guidelines for Nominal Records on the Police National Computer

In support of the powers provided by Section 82 of the CJA and Sections 9 and 10 of the CJA, it has become necessary to retain a nominal record of every person arrested for a recordable offence on the Police National Computer (PNC) to enable a link to be made between the DNA profile held on the NDNAD and fingerprints held on the national automated fingerprints database (IDENT1) to help the police identify and locate an individual following

a match being obtained on the NDNAD.

To facilitate this requirement, ACPO have developed new 'Retention Guidelines for Nominal Records on the Police National Computer' which replace the 'General Rules for Criminal Record Weeding on Police Systems' from 31 March 2006 as part of the Guidance issued under the Code for Management of Police Information. They are available in full on the Home Office website:

<http://police.homeoffice.gov.uk/operational-policing/bichard/>

The new Retention Guidelines are based on a format of restricting the access that non police users have to PNC, whilst at the same time allowing the police long term access to the data. This is achieved by 'stepping down' data after specified periods of time in order that they are only open to inspection by the police. The 'step down' time periods are based on the age of the subject, final outcome, sentence imposed and offence category.

Following the step down, non police users of PNC will be unaware of the existence of the data, save for those occasions where the individual is the subject of an Enhanced Check under the Criminal Records Bureau vetting process.

Full implementation of the Retention Guidelines is dependant upon technical and legal changes which are scheduled for completion by 2007.

Charging on the Basis of a National DNA Database Match Report

Since the introduction in August 2004 of the Prosecution Team DNA Guidance, it has been possible to charge a suspect on the basis of a DNA match report, provided there is appropriate supporting evidence. This Guidance was based on the principles set out in the National Tripartite Protocol signed up to in January 2004 by the Crown Prosecution Service (CPS), ACPO and the FSS. These principles and the Guidance now apply on a national basis to the working relationship between the CPS, ACPO and providers of forensic science services generally. Home Office Circular 58/2004 provides interim supplementary guidance until completion of the full update of Home Office Circular 16/1995.

The DNA profiles added to the NDNAD are as reliable as those obtained for use in evidence.

Legislative and Policy Changes continued

The National DNA Database Match Report

Charging an individual on the basis of a NDNAD match report means charging on the basis of information that is not immediately available in an evidentially admissible format, even though the necessary scientific statements will be provided throughout the course of preparing the case. A significant benefit of this is that in such cases there is no need to grant the suspect bail in order to wait for the full evidential statement from the scientist.

Staged Reporting

The Prosecution Team DNA Guidance also introduced Staged Reporting into the process of criminal case file preparation. Staged Reporting is designed to maximise use of the Criminal Justice System reform tools provided by the provisions of the Criminal Justice Act 2003 and the Criminal Procedure Rules, implemented in April 2005, in particular the requirement of early identification of the issues in the case by both the prosecution and the defence, and the increased expectation of robust case management.

Both of these fundamental changes are also designed to maximise the benefits of greater partnership working brought about by the full national rollout of the Statutory Charging scheme, completed in the summer of 2005. This has seen the presence of CPS Prosecutors working from police stations making early charging decisions, as well as the provision of 24 hour CPS telephone coverage by CPS Direct.

Staged Reporting is where an initial abbreviated statement is provided by the scientist simply to confirm the validity of the NDNAD match report, with a full statement only being requested where the actual issues identified require full evaluation. For example, in a case alleging rape where the issue is consent, there will generally be no need to provide a full evaluative statement dealing with the identity of the suspect.

This change provides a significant opportunity to improve the turnaround times for analysis in the laboratories and the provision of statements by the scientists, as well as greatly reducing the costs of forensic science evidence.

Due to the wide range of different IT and data

gathering systems throughout the country, as well as regional differences in judicial case management, opportunities to measure implementation, financial and time savings are limited at this stage. However, the following broadly illustrates some very encouraging trends:

1. In the financial year 2005/06, one supplier (FSS Ltd) received 1,887 requests for an abbreviated statement in respect of a NDNAD match report.
2. Following these, they received 175 further requests for a complex or full evaluative statement.
3. The cost of an abbreviated statement is very broadly around £100. A rough cost average for a complex or full evaluative statement is around £600.
4. Prior to the introduction of Staged Reporting, all 1,887 statements would have been 'full' at a rough total cost of £1,132,200.
5. As a result of using Staged Reporting, the cost in these cases was therefore reduced to roughly £293,700 (£188,700 plus £105,000), a saving of £838,500 (74%).
6. There are also very significant time savings from Staged Reporting. For example, an abbreviated statement would take the scientist around 1 hour to produce, whereas a complex or full statement would average around 6 hours, and this allows the laboratories to process their other work more efficiently.

Criminal Justice System Forensic Science Strategy Group

Following the change in status of the FSS in December 2005, the Criminal Justice System (CJS) Forensic Science Strategy Group was formed in January 2006 to provide a strategic forum for communication between CPS, ACPO, the Home Office and all providers of forensic science services. One of the tasks of this group is to take forward the need to improve data gathering facilities and monitor the timeliness and financial savings of charging on NDNAD Match Reports and using Staged Reporting.

Northern Ireland

The DNA legislation in Northern Ireland is essentially the same as that in operation in England and Wales, differing mainly in the timing of its implementation. Thus, the police in Northern Ireland have had the power to take non-intimate DNA samples, without consent if necessary, since implementation of the Police and Criminal Evidence (Northern Ireland) Order 1989 and the requirements for the taking, use and retention of DNA samples, equivalent to those in the CJPOA for England and Wales, were introduced under the Police (Amendment) (Northern Ireland) Order 1995. The amendments to PACE in England and Wales, made by the CJA 2001 (on retention of DNA samples and data from persons who were not convicted or not prosecuted) were extended directly to PACE in Northern Ireland by that Act. The taking of non-intimate samples without consent and arrestee sampling consistent with the CJA 2003 were introduced under the Criminal Justice (Northern Ireland) Order 2004 (which amended the PACE (Northern Ireland) Order 1989), although it is not yet police policy to exercise this latter power routinely. The SOCPA 2005 (on use of DNA samples to aid the identification of deceased persons) does not yet extend to Northern Ireland, but is expected to be introduced early in 2007/08 under a forthcoming PACE Amendment (Northern Ireland) Order.

Scotland

The Scottish equivalent of PACE is the Criminal Procedures (Scotland) Act 1995 and the position in Scotland in relation to DNA is largely similar to that in the rest of the United Kingdom.

The main difference relates to the retention of samples and profiles. The CJA 2001 amendment to PACE concerning retention of DNA samples and information obtained therefrom was not replicated in Scotland, where such samples and data still have to be destroyed following a decision not to institute criminal proceedings or on the conclusion of such proceedings otherwise than in a conviction (or absolute discharge made under section 246(3) of the 1995 Act). Also, although as under the CJA 2001, volunteers in Scotland are able to consent separately for their samples to be retained and their profiles added to the DNA database, under the Criminal Justice (Scotland) Act 2003 the consent

can subsequently be withdrawn, and the profile then has to be removed from the database, so long as the destruction of the sample or profile at the time of the request does not conflict with their use for evidential purposes.

The issue of DNA retention was discussed fully during the recent passage of the Police, Public Order and Criminal Justice (Scotland) Act 2006. Amendments to bring the law in Scotland more in line with that in England and Wales were withdrawn at Stage 2. However, section 83 of the 2006 Act, inserts a new section 18A into the 1995 Act and allows for DNA samples to be kept for at least 3 years in the event that criminal proceedings in respect of relevant sexual or violent offences were instituted against the person, but those proceedings concluded otherwise than with a conviction (or absolute discharge). The relevant offences are those listed in section 19A(6) of the 1995 Act. Section 83 of the 2006 Act has not yet been commenced. No change in the legislation relating to volunteers has been proposed.

The 2006 Act will also make further provisions to allow the police to take a DNA sample from a sex offender who attends the station to notify; from any person who is subject to the sex offender notification requirements (i.e. on the sex offenders register) if they do not already hold their samples; and from those on Risk of Sexual Harm Orders (which can be retained for the duration of the Orders, after which they must be destroyed).

Police Operational Developments

National DNA Operations Group

The National DNA Operations Group has continued to meet quarterly under the chairmanship of Assistant Chief Constable Stuart Hyde.

Considerable progress in a variety of business areas has been achieved through working closely with a range of partners and by developing a longer term strategic overview of the key operational aspects impacting upon the use of DNA and the quality of associated DNA data.

Improving Data Collection and Integrity

Significant emphasis has been placed on improving the integrity and quality of the data that is collated and disseminated in relation to DNA, to ensure that public confidence in DNA profiling and the NDNAD is maintained. This has involved stringent monitoring of police forces and supplier laboratory performance in collecting and providing these data.

In particular, forces and suppliers have been encouraged to work more closely together to reduce the incidence of load failures when profiles are submitted to the NDNAD, to reduce the loading of replicate sample profiles to the NDNAD and to improve the quality of data recording in relation to coding of ethnic appearance.

Work is also on-going to ensure that forces comply with the requirement for profiles from relevant personnel to be provided for the Police Elimination Database (PED). It is important to ensure that the PED is as up to date and comprehensive as possible in order to maximise its effectiveness in eliminating contributions from police personnel to profiles from crime scene stains that may otherwise delay an investigation (see p41).

Communication

The DNA Operations Group remains a conduit for disseminating good practice and the latest developments between police forces, the Home Office and suppliers of profiles to the NDNAD. It has

also been developing relationships with the regional DNA Liaison Panels to facilitate more effective cooperation between partners at a local level.

Northern Ireland DNA Profiles

The DNA Operations Group has been intimately involved in the process of uploading DNA profiles from Northern Ireland to the NDNAD. This is now complete and 62 matches have been reported to date, including a match relating to a murder and three matches relating to arson (see p19).

Good Practice Guidance

Following the launch of the revised Good Practice Guide in 2005, work has continued to develop appendices in relation to the use of familial searching for serious crime investigation and the use of mitochondrial DNA.

In addition, the Guide is currently subject to a community impact (race and diversity) assessment to ensure that any implications of the guidance are identified and responded to accordingly.

E-Match Reporting

Following a successful pilot with West Midlands Police during 2004/05, the new Custodian automated delivery of DNA match reports (eDNA) service became fully operational in June 2005. West Midlands Police and South Yorkshire Police were the initial users. Roll-out to other force users has been overseen by the DNA Operations Group.

From the force perspective, eDNA provides a number of benefits compared to the previous manual fax-based system for transmitting DNA matches to forces. First, it is faster, more reliable and secure. Second, through its XML technology, eDNA delivers DNA match information in a flexible electronic format that can be up-loaded to force systems – and thus integrated with other intelligence information systems, both local and national. In the 2004/05 eDNA pilot, the system proved extremely reliable: in excess of 120,000 DNA match reports were delivered, with no errors.

Implementation of the eDNA system was the culmination of a complex 2-year project. This in turn forms part of the programme of NDNAD IT improvements aimed at achieving automation of the end-to-end NDNAD process - from DNA sampling through to match reporting. The cost of the project has been funded by the Home Office through the DNA Expansion Programme. Forces are, however, being asked to fund the incremental costs for coming online – principally for any IT system changes required in-force, plus the cost of testing the data transfer.

Forces continue to receive DNA match reports by fax until they take up the eDNA system. However, in order to improve operational efficiency of the faxing process, a new system of automated fax delivery was introduced in March 2006. This has eliminated all paper handling of match reports within the NDNAD Custodian operations area. Although the eDNA system is by far the preferred means of delivering NDNAD match information to forces, the autofax system also provides a valuable back-up to eDNA, as part of the business continuity provision.

DNA Sampling Kits

In October 2005, a working group was convened to review the various issues that had arisen from introduction of the new PACE and Volunteer kits in April 2005. A number of recommendations were made for a redesign of various components within the kits to help address these, such as making all the bags transparent; having re-sealable tabs on the outer bag to allow the DNA submission units to open the kits to check the contents and make amendments to the forms, if required, before kits are forwarded to the supplier laboratory; removing the CJ labels and the expiry date from the sample bag; and adding a new tick box section printed on the front of the PACE kits bag to allow police officers to indicate whether the sample has been taken because the arrestee does not already have a DNA profile on the NDNAD or it has been taken for comparison purposes or an upgrade.

These changes will make it easier and quicker for force personnel to assess and check the contents of kits before they leave the force and will reduce costs as forces will no longer need to purchase additional outer bags if any amendments are required.

The redesigned kits (Fig. 2) became available from March 2006.

Profiles derived from samples taken under PACE with the redesigned kits will continue to be suitable for charging on the basis of a NDNAD match and for use in evidence.



Figure 2

Police Operational Developments continued

DNA and Fingerprint Retention Project

Arrestee Sampling

New police powers were introduced on 5 April 2004 to enable the police to take and retain a DNA sample from a person arrested for a recordable offence and detained at a police station, regardless of the outcome of the case. Those against whom it is decided to take no further action are known as 'CJ Arrestees'.

All police forces in England and Wales have now adopted these powers. Between April 2004 and March 2006 they provided an opportunity to obtain DNA samples in over 600,000 cases where the police would previously have been unable to take them. However, it is policy that only one sample should be taken from a person for analysis and addition of the profile to the NDNAD, and since recidivism accounts for approximately 75% of criminal activity it could be estimated on this basis that the increased opportunities would result in only 150,000 DNA samples being obtained from new individuals. On the other hand, all forces will take samples from CJ Arrestees who already have a profile on the NDNAD if this profile is based on SGM rather than SGM Plus, and some will take samples from CJ Arrestees using the new sampling kits and processes in order to have a profile on the NDNAD that can be used in evidence.

Profiles from CJ Arrestees cannot currently be distinguished on the NDNAD from profiles from other subjects, but work carried out by ACPO has identified that between April 2005 and March 2006, over 200,000 extra DNA samples (53% increase) were taken compared with the period April 2004 to March 2005.

The addition of CJ Arrestee sample profiles to the NDNAD has brought significant benefits, including direct police savings through speedier investigations, quicker apprehension of offenders, earlier elimination of suspects and greater victim reassurance.

The Government appreciates that some people may be concerned about building a larger DNA database, particularly where it relates to people who have not been proceeded against for an offence. However, it has concluded that any intrusion on personal privacy is both necessary and proportionate, to the benefits for victims of crime and society generally, in terms of detecting crime and protecting the public against criminals.

Value of Retaining Records of CJ Arrestees - Case Study 2

- A male was arrested for violent disorder, described as a family feud, in his home in February 2005.
- He had his DNA taken for the first time and was released without charge.
- In July 2005, a stranger rape occurred some 25 miles away in another police force area.
- There were no clues as to who the rapist might be until skin from beneath the victim's fingernails was profiled and found to match the DNA profile taken from the male.
- The investigating officer commented:
"We would never have got him had his DNA not already been on the Database – he didn't even live locally so we had no intelligence leads either".

Value of Retaining Records of CJ Arrestees - Case Study 1

- A male was arrested in November 2004 for assault occasioning actual bodily harm and was released without charge when the victim refused to make a statement.
- His DNA was taken for the first time.
- The male met a woman at a bus station in March 2005 and gave her a false name.
- In April 2005, the male went to the woman's home where he raped her.
- Swabs taken from the victim matched the DNA profile taken from the male and he was arrested and charged soon after.
- The investigating officer commented;

"Had it not been for his arrest in November and his DNA being on the Database, lengthy and expensive investigations may ultimately have identified him."

Police Standards Unit

Operation Sapphire

In 2002, the FSS, in partnership with the Metropolitan Police Service, agreed to review around 300 unsolved sexual assaults from the 1980s and 1990s, which had been profiled using the old single locus probe (SLP) DNA technique, to establish if the laboratory had retained any samples which could be re-tested using the latest DNA techniques.

To date, 209 cases have been identified with samples that could be reanalysed and 185 SGM Plus DNA profiles have been obtained from the retained SLP DNA extracts, swabs, stains from exhibits and a few microscope slides. When the resulting DNA profiles were checked against the NDNAD, 90 matches were obtained with profiles from individuals represented on the Database. So far, 11 suspects in 14 cases have been brought to trial, with convictions being obtained in all cases.

Operation Advance

The Metropolitan, South Wales and Northumbria police forces subsequently approached the Police Standards Unit (PSU) for funding to assist in progressing more undetected cases. PSU provided £280,000 split between the three forces and carried out an evaluation of their work. The emerging findings from the PSU evaluation prompted initiation of Operation Advance in February 2004.

Working closely with the FSS, samples were identified as available in 215 further undetected cases in which SLP profiling had been undertaken and 148 of these were reanalysed, producing 112 SGM Plus profiles. These ranged from full profiles to uninterpretable mixtures, and 77 were suitable for speculative searching against the NDNAD. To date, 42 matches have been obtained with a named individual or another crime scene sample, a success rate of 28%, and 20 offenders have been convicted with sentences totalling over 150 years, including several life sentences.

Operation Advance Phase II

On 12th July 2005, following the success of Operation Advance, PSU launched a second tranche of work, Operation Advance II. This followed the same methodology as Operation Advance, but concentrated on cases that occurred from 1994 onwards where the DNA samples had been analysed using the first STR profiling system, QUAD. PSU provided funding for these to be reanalysed using the latest, more sensitive low copy number SGM Plus (LCN) profiling technique.

To date, 841 crimes of rape and serious sexual assault that occurred from 1994-96 have been sent to the relevant police forces for a decision on whether they are still undetected. This has resulted, so far, in 137 being identified as undetected and suitable for further forensic work, and samples from 66 of these cases being reanalysed, resulting in 22 matches against the NDNAD, a 33% success rate. Suspects are to be arrested imminently in 3 of the cases and in 1 other case an arrest had already taken place for an offence that took place in 1994.

There are a further 24 cases in which a SGM Plus profile has been produced that is suitable for loading to the NDNAD but has failed to result in a match on the first speculative search. There is a good chance, however, that these will generate a match at a later date.

Police Operational Developments continued

Case Study - Operation Advance 1

On 23 June 1995, a 17 year old girl was walking home after a night out with friends in Banbury when she was bundled into a car by two men and taken to a secluded part of the countryside near Ladbroke. There, she was subjected to repeated rapes and indecent acts, and throughout the attack threats were made to kill her. Afterwards, the girl, who was left partially clothed, ran through the countryside until she eventually found a house where the residents took her in and contacted the police.

In 2005, Lee George Ainsby was identified as a suspect for this offence when the original sample from the case was reanalysed and a profile was loaded to NDNAD that matched a profile obtained from him in 2003 for a drunk and disorderly offence.

Scientists from the FSS realised that the second attacker must have been a close relative of Lee Ainsby's and a DNA sample from his older brother, Stephen Paul

Ainsby, was requested. Shortly afterwards Stephen Ainsby confessed to the offence.

Earlier this year (2005) Lee and Stephen Ainsby admitted kidnapping and raping the girl and were sentenced at Oxford Crown Court to 10 years each for the rape and 5 years each for the kidnapping offence. Passing sentence Judge Julian Hall said, "This offence has shattered the life of the victim, not only that but it did the same to other members of her family".

Following the hearing, Detective Inspector Rob Mason of Thames Valley Police said, " I was involved in the case ten years ago and it was an inquiry that was very dear to the many officers that were involved because they were so horrified by the attack. This case demonstrates how the police will continue to investigate cases however long it may take to bring offenders to justice. We were very pleased for the victim and her family".



Lee and Stephen Ainsby



Darren Jennings

Case Study - Operation Advance 2

On Boxing Day 1991, a 20 year old woman was on her way home after a night out with friends at a night club in Manchester when she was grabbed from behind at a taxi rank, dragged to a nearby builders' yard, threatened and raped.

Techniques at the time were able to produce a SLP profile of the offender, but this was only capable of being compared to samples from suspects and there were no suspects. The case thus remained open awaiting further information.

In 2004, Greater Manchester Police had recently set up a Cold Case Review Unit to reinvestigate unsolved serious offences, and was given the task of using advancements in forensic science to get justice for victims. The team of officers, working closely with the FSS, CPS, and St Mary's

Sexual Assault Referral Centre, reinvestigated the rape and using the latest DNA profiling technology advancements obtained a complete SGM Plus profile. This profile was loaded to the NDNAD and matched with a profile from Darren Jennings

On 3 March 2005, officers arrested Jennings, 37, at his home. He was charged and on 21 October 2005 was jailed for eight years at Manchester Crown Court for rape

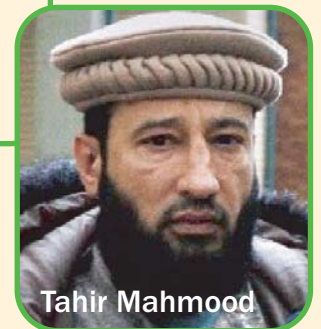
DC Michaela Clinch, from the Cold Case Review Unit, said: "...The period since the attack has been a difficult one for the woman who Jennings raped. It was a brutal attack and she has bravely rebuilt her life over the years, despite knowing that the man had never been caught."

A statement from the victim issued after the trial said, "...It is a great relief to know that the man who attacked me nearly 14 years ago has been brought to justice. Hopefully this conviction, with the knowledge that justice has been delivered and no-one else is at risk from him, will allow me to bring complete closure to this period of my life."

Operation Advance: Familial

For 22 of the most suitable Operation Advance samples that produced a full profile but no match against the NDNAD, PSU provided additional support for familial searching of the NDNAD for possible parent/child and siblings of the offender. This familial work is now complete.

Exhibits relating to the rape of a woman in Leeds in 1993 were re-examined as part of Operation Advance and a DNA profile was obtained. This did not generate a match on the NDNAD, so a familial search was undertaken. Further research was conducted by the police on the lists of possible relatives and a suspect, Tahir Mahmood, was identified.. Mahmood was subsequently convicted of the rape at Leeds Crown Court on 23 February 2006, and was sentenced to seven years imprisonment. At the time of the offence, Mahmood was working as a taxi driver and had raped the young lady whilst driving her home after a night out.



NSPIS Custody

The NSPIS Custody application was designed to computerise the custody business process and make it paperless. The Custody process is governed by PACE and the accompanying Codes of Practice. The system was first piloted in Avon and Somerset in September 2002 and has since been rolled out to 25 forces throughout England and Wales. It records in chronological order on the detention log all details of persons that have been arrested and detained at a police station and everything that happens to that person whilst they are detained, including the taking of DNA samples.

The NSPIS custody application provides the user with a screen on which to record all the relevant details about the detained person and produces a form that will accompany the DNA sample to a laboratory for analysis. Certain fields within the screen are mandatory and therefore have to be completed before the form can be produced. Other fields are automatically populated with data that has been captured by the user as the booking-in procedure is completed.

The DNA form produced by the application contains all required details of the detained person, the sample taken and the officer taking the sample. The sample ID number (the unique kit barcode number) and the ASN are also displayed in both numerical and bar code values. The ASN has been automatically produced by the application and the unique kit barcode number transferred using a bar code scanner, eliminating the need for manual entry of these details and thus the risk of data transcription error.

DNA Form	
Sample Barcode	Phoenix Arrest Summons Report Number 06/16CI/01/16N
Sample ID Number 94000009	
Surname: FORN	
Forename(s): Duncan Norman Arnold	
Date of Birth: 16/08/1972	Sex: Male
Ethnic Appearance: White European	
Sample Type: 03 Swab	Resample: No
Date Sample Taken: 03/08/2006	
Officer Taking Sample: No.: 647	
Surname: OLEARY	
Force / Station Code: 16CI	
Offence Type: 10 Criminal Damage	
Force Custody Number: 16CI/16/06	

Fold this sheet along dotted line and place this side up in DNA Kit Bag

DNA details recorded on NSPIS custody are transferred to PNC within one hour of the detained person leaving the custody facility. If DNA information is already present on PNC the user will be alerted to this fact, allowing them to take appropriate action.

* note. All details in this form are fictitious

Supplier Laboratory Developments

England and Wales

Over the past few years a contestable marketplace has been emerging for the provision of forensic science services to the police forces of England and Wales. The change in status of the FSS in December 2005 to a private sector classified GovCo represented a significant further step in this marketplace evolution. In order to provide support to police forces in this new environment, as well as to enable a consistent approach, ACPO and the Home Office have developed a framework for the procurement of these services, including DNA profiling.

Against this background, two new organisations have approached the Custodian during the year with a view to becoming accredited NDNAD suppliers, and therefore able to bid to provide DNA profiling services to the police. It is anticipated that more potential new NDNAD suppliers will come forward in the future.

However, the main organisations providing DNA profiling services during 2005/06 remained as the FSS, LGC and Orchid Cellmark with Forensic Alliance, although there have been significant developments within these organisations during the year.

Forensic Science Service/Forensic Science Service Ltd.

The market leader, the FSS, continues to set standards in this field worldwide. Since becoming a GovCo, the organisation has embarked upon a significant transition in shifting its focus to operate in a commercial environment whilst keeping at the forefront of innovation and retaining its traditional values in serving the Police and the CJS. The FSS were the first to introduce Low Copy Number DNA profiling and Laser Micro Dissection, to increase the sensitivity of DNA profiling; Familial Searching of the NDNAD; and Pendulum List Searching for mixture analysis. They are currently developing a further technique, DNAbboost, powerful software which when coupled with scientific expertise will allow the FSS to separate out the component DNA profiles from even more complex mixtures.

Operation Sphinx

Operation Sphinx was the investigation into the murder of David King on 3 October 2003 at Hoddesdon in Hertfordshire. That morning a white transit van drove slowly past the gym that King was leaving and fired 26 rounds at him from an AK47 assault rifle. A van matching the description of that involved in the attack was later found abandoned and set alight about half a mile from the scene of the shooting. The next day, two members of the public saw a man dumping a holdall in a stretch of water in Breydon Water, Norfolk. This holdall was found to contain what turned out to be the murder weapon wrapped in various items of bedding and towels.

As King was a known criminal involved in crimes of violence, drug supplying, kidnapping and extortion, it was recognised immediately that this would be a complex investigation so Hertfordshire Police requested that the FSS provide a scientific adviser to help with the case.

One of the towels from the holdall bore a stain which yielded a match on the NDNAD identifying Roger Vincent as a potential suspect. Vincent was a one-time friend of King's who had featured in early intelligence regarding a possible motive for the murder.

A complex mixture of DNA was detected on an area of the weapon's magazine. This contained all the components of the profile of David Smith, an associate of Vincent, and the FSS were able to provide almost conclusive evidence that his profile was indeed present.

Smith's fingerprints and DNA were also found on a pair of plastic gloves, such as those worn when filling vehicles with diesel, which had been recovered near to the burnt-out van. This supported other CCTV evidence of a male fitting Smith's description filling up the van in a petrol station the day before the murder.

Numerous fibre 'collectives' were also recovered from the surface debris of items found in the holdall. One of these collectives consisted of blue polypropylene fibres, typical of those used in the manufacture of carpets. Over thirty carpet samples were seized from searches of various suspects' addresses, which led to a match with a carpet used in a flat previously owned by Vincent. Further matches were found between the fibres recovered from the holdall contents and other carpets present there. One of these carpets was composed entirely of jute and this in itself was so unusual that the fibres became strong evidence that assisted in convicting Vincent.

Giving evidence at the trial was a daunting experience; the Court was heavily guarded by armed officers and even the jury had special protection measures. Vincent and Smith were both found guilty and given life imprisonment with a recommendation to serve a minimum of thirty and twenty-five years respectively.

DNA leads police to Ripper hoaxer 26 years on

LCN DNA analysis, which can obtain a DNA profile from a sample expected to contain very few cells, even if it is too small to be visible to the naked eye, has been used to identify the man responsible for sending letters and an audio tape to the police in the late 1970s falsely claiming to be the Yorkshire Ripper.

The accent of the voice on the tape led investigators at the time to focus their attention on the Sunderland area, and the media to dub the caller 'Wearside Jack'. This diverted attention away from the real ripper, Peter Sutcliffe, who had been interviewed by police as part of the investigation, but had been discounted as he did not sound like the man on the tape. Sutcliffe went on to murder three more women before finally being caught in January 1981.

Most of the original letters and envelopes from the 1970s had been subjected to extensive chemical fingerprint testing at the time, using radioactive sulphur dioxide which left them severely blackened and unsuitable for further testing. However, three small pieces of one of the envelopes had been retained by the FSS, and when West Yorkshire Police decided to reopen the case it proved possible to obtain a DNA profile from these using LCN DNA analysis,

This profile was searched against the NDNAD and matched with that of a man from Northumbria, John Humble, who was arrested and charged in October 2005 and sentenced to eight years in prison after pleading guilty to four counts of perverting the course of justice.

Forensic Response Vehicle

The FSS has successfully validated and piloted the use of a mobile laboratory, their Forensic Response Vehicle (FRV), for carrying out analysis of crime scene samples and checking for matches on the NDNAD in closer proximity to the crime scene. This represents the first step towards miniaturisation of DNA analysis and providing more immediate access for investigators to the NDNAD.

Pendulum List Searches

Where the proportions of DNA in mixtures from multiple unknown contributors are markedly different, it is usually possible to establish the separate profiles of the different contributors. But where the sample contains roughly equal amounts of DNA material from multiple unknown contributors, resolution of the profiles has hitherto been much more difficult or impossible. Pendulum List Searching (PLS) is a technique developed by the FSS specifically to help resolve previously uninterpretable mixed DNA profiles from two fairly equal contributors.

PLS produces a list of DNA profiles that could combine to produce the mixed profile in question and prioritises them in order of 'best fit'. The profiles on the list, which could run to many thousands, are then speculatively searched against the NDNAD. Any matches obtained are then passed on to police for further investigation.

It achieved its first success in helping to detect an offender this year.

FRV pilot

The FSS successfully completed a pilot exercise with Lincolnshire Police in August 2005 in which a prototype FRV was employed to carry out DNA analysis of crime scene samples within the force and the resulting DNA profiles were checked for matches against the NDNAD. The pilot focused on identifying suspects for volume crime offences and matching profiles on the NDNAD were identified in as little as nine hours.

Results from the first two weeks were used to complete the validation of the DNA analysis services in a 'live environment', by comparison of the results obtained with those from a parallel analysis process at the FSS London and Huntingdon laboratories.

Forty-eight DNA profiles were speculatively searched against the NDNAD. Thirty-one (64%) of these resulted in a match, 20 (65%) being with one suspect, five (16%), with multiple suspects and six (19%) with one suspect with multiple CJ samples. Nine arrests were subsequently made, one being for a persistent offender within forty minutes of receipt of the match information.

First conviction in Pendulum List Searching case

On August 28, 2005, a lone female was walking along a subway between Livery Street and Great Charles Street in Birmingham city centre when she was grabbed around the neck by the offender, forced to the ground and sexually assaulted. The FSS found DNA on a pair of sunglasses recovered from the crime scene. This contained contributions from two or more people.

Use of PLS produced a match with a profile on the NDNAD from Duncan Edward Turner, who had previous convictions for indecent exposure and indecent assaults between 1988 and 1996. After further police enquiries he was arrested and charged. He subsequently pleaded guilty and was given an indeterminate sentence for sexual assault at Birmingham Crown Court, with a recommendation that he should serve a minimum of two-and-a-half years.

Supplier Laboratory Developments continued

Familial Searches

Familial searches of the NDNAD against a DNA profile from an unsolved crime are carried out only in respect of the most serious types of offence and in circumstances where the offender does not have a DNA profile on the NDNAD but it is thought that there may be a profile from a close relative on the Database. As such searches may reveal large numbers of potential close relatives and sensitive personal information about them, any follow up action by the police is carried out in strict compliance with advice received from Information Commissioner and Guidance issued by the National DNA Operations Group to minimise intrusion.

Since the inception of familial searching, the FSS have been involved in 120 operations, 39 of these in the last year. A successful conviction has resulted in 7 of the operations and in 3 others, although an individual was nominated as the potential offender, no conviction followed due to the person being deceased or found not guilty. In 5 further operations where a potential offender has been identified the cases are still sub judice.

Some Recent Successful Familial Search Operations

Operation Nightingale - The 'Shoe Rapist'; South Yorks Police

A cold-case review was carried out of a series of sexual assaults in the early 1980s in South Yorkshire on women walking home from pubs and clubs. The majority were committed in the early hours of Saturday mornings and in most cases the rapist stole shoes and jewellery from his victims, earning him the nickname 'the shoe rapist'. The police investigation at the time was unable to identify the attacker. Re-examination of old retained evidence by the FSS resulted in the same DNA profile being found in four of these cases. However, there was no match between this profile and any profile on the NDNAD. It was then decided to try familial searching of the NDNAD, to check for matches with individuals who could be a close relative of the offender. This provided new lines of enquiry for the police to investigate and helped to identify a suspect, James Desmond Benjamin Lloyd, who later pleaded guilty at Sheffield Crown court to six of the sexual assaults and was given an indefinite prison sentence. The judge ordered another two offences to lie on file.

Operation Mallard; Northamptonshire Police

James Ben Davies was sentenced to four and a half years imprisonment in September 2005 after pleading to a string of sexual assaults in 1998 and 2000. The offences occurred in Hampshire, Cambridgeshire and Northamptonshire. The offender was identified through a relative following a familial search of the NDNAD. This was the first cross border case solved using familial searching.

LGC Ltd. / LGC Forensics

LGC acquired Forensic Alliance in 2005 creating LGC Forensics, combining the parent organisations' historic focus in different parts of the forensic spectrum and their reputations for innovation, quality and service delivery. This will present the police with more choice when inviting bids for new contracts. Since merger, one of LGC Forensics' main thrusts has been to expand and enrich its DNA profiling services, particularly at the complex, innovative end of the range in support of its major crime investigations. The Company is already beginning to reap the benefits of substantial investments here with some high profile casework successes.

LGC continues to work in close partnership with Orchid Cellmark on historic Forensic Alliance contracts.

Operation Dent –a team success

In November 2005, LGC Forensics' Scene of Crime team based at Teddington worked with the Metropolitan Police on Operation Dent, an initiative targeting pre-Christmas burglaries in six boroughs in London. The objective was to obtain DNA profiles from samples from the burglaries, load them to the NDNAD and report any subsequent matches to the police within nine hours of the laboratory taking receipt of the samples. This turn round time was paramount and its achievement and success of the operation relied heavily upon LGC Forensics, the NDNAD staff and the Metropolitan Police joining together, working very much as a team.

The samples that were swabbed and analysed for the presence of DNA included blood, drinks containers, food items and cigarette ends, and the vast majority of profiles obtained were loaded to the NDNAD on the same day the samples were received.

In one case, a distraction burglary, a female knocked on the door of a 60 year old woman in Bromley, claiming to be selling raffle tickets for a church Christmas party. She asked to use the toilet and was admitted into the house. She then asked for a drink of water. When the victim went to fetch this from the kitchen, the caller went into the lounge and stole the victim's handbag. She then drank the water and left the house.

The cup from which the offender drank was swabbed and a mixture of two female profiles was obtained on analysis. One of these was shown to be that of the victim. The other was loaded to the NDNAD and resulted in matches being obtained with a profile from a female on the NDNAD and another crime scene sample.

Operation Zinnia - a senseless attack on a defenceless old lady

An elderly man left his 80 year old wife at home while he popped out to the travel agents. When he got back, he discovered her dead body lying in the hall. She had suffered 13 stab wounds. There was no obvious suspect.

Swabs taken from the old lady's right hand at post mortem were analysed and yielded a mixed STR profile with DNA from at least two people and a further trace from a third. The components that could have come from the old lady were 'removed' to reveal an almost full profile of an unknown female. This was searched against the NDNAD and matched with the profile from an 18 year old girl.

Until 18 months previously, the girl had lived in the same street as the old lady. More recently, she had been the subject of a restraining order banning her from the street for racially abusing another resident.

When the girl was arrested, she denied having been in the old lady's house but said she had helped her cross the road the previous morning and suggested that the old lady could have scratched her hand on that occasion. At court, discussion centred on how long DNA could persist on a hand, and how likely it was that the old lady would have washed her hand in the relevant time period.

The girl was convicted and sentenced to 20 years in prison (subject to appeal on length of sentence).

Operation Yateston - a burglary that went horribly wrong

A burglar broke into a house, waking the male occupant in the process. On going downstairs to investigate he disturbed the burglar who stabbed him in the hand with a knife from the kitchen drawer. He subsequently died from his injuries while the burglar made good his escape.

A knitted hat and a car aerial were left at the scene. Skin flakes and hair from the hat and swabs from the aerial were analysed as a matter of urgency and produced the same full male STR profile. This was loaded to the NDNAD and matched the profile from a man who had recently been released from prison after serving a sentence for breaking and entering. He was arrested and charged. Later during the investigation some blood staining discovered inside the letterbox of the deceased's house was also analysed and produced a full STR profile matching the suspect's. The man was found guilty at court and sentenced to 27 years imprisonment (subject to appeal on length of sentence).

Supplier Laboratory Developments *continued*

A vicious sexual attack

Early one Sunday morning, a young woman living in the north-west of England was disturbed by a man who had entered her home via an open downstairs window. She was subjected to a vicious attack during which a knife was held to her throat and she was raped. Police submitted various intimate swabs and items of her clothing for examination. They had seven possible suspects but no firm lead on any of them.

During the ensuing investigation, it emerged that a man had entered the homes of two other women on the same housing estate during the same weekend, but in each case these women had managed to fight him off. The incident was broadcast widely in the press and on television and appeals were made by police for people in the area to keep their windows securely locked at night despite the warm weather. It was clear they had an active rapist in the area who would not hesitate to inflict serious injury on his victims.

Within 48 hours, LGC scientists had identified traces of semen in samples from the young woman and obtained a mixed DNA profile from these. After subtracting the victim's profile, they had sufficient of a second profile for a speculative search of the NDNAD. When combined with other information about the offender - such as approximate age and ethnic appearance, which the victim was able to provide - the NDNAD yielded two good matches. Police discovered that one of these related to a man who lived in the neighbouring street to the one in which the rape occurred. This was Day 3 of the investigation and that night police requested a comparison of fingerprints found at the scene with those of the suspect. They matched and he was immediately arrested and charged.

The scientists went on to improve the residual profile from the mixture and were eventually able to exclude the second possible suspect. In the end they calculated the chance of finding a match between the 'foreign' DNA and the suspect's DNA if the 'foreign' DNA had come from someone other than the suspect was approximately 1 in 37 million.

The suspect was later convicted at court and sentenced to 10 years in prison. The judge commented that this would have been more had he been over 18 years of age.

Sample storage

Since 1995, it has been the responsibility of the laboratories that analysed the DNA samples to store them afterwards under secure conditions specified by the Custodian that will ensure their long term viability. The samples can thereafter only be used for purposes related to the prevention and detection of crime, the investigation of an offence or the conduct of a prosecution. Within these constraints they are also used for quality assurance and error investigation purposes defined by the Custodian, and for specified research approved by the NDNAD Strategy Board.

The retention and storage of DNA samples post analysis by suppliers has been a concern expressed on many occasions in various reviews of the NDNAD because, unlike the DNA profiles, which contain little genetic information, the samples themselves could be reanalysed to reveal personal genetic information. The law clearly does not allow such usage, but nevertheless the concerns remain and it has been suggested that there would be better control of the samples and public reassurance if the samples were to become the responsibility of the Custodian once a successful analysis has been obtained.

Orchid Cellmark Ltd.

Orchid Cellmark Ltd has been a leading supplier of DNA services to the global forensic community for two decades and is an approved supplier of DNA analysis services for the NDNAD in collaboration with Forensic Alliance. In 2006, it announced the formation of a new division, Cellmark Forensic Services, and made a significant investment in new facilities and personnel. The Major Crime DNA team was relocated to purpose-built clean room facilities on the Abingdon site, new specialist examination laboratories were developed and more senior reporting staff were recruited, with a commitment to provide forensic DNA analysis and associated forensic services directly to police forces across the UK.

Familial Searches

Orchid Cellmark have carried out two familial searches to date, but none in the last year. One of the searches led to the conviction in 2003 of Jeffrey Gafoor for the murder of Lynette White in Cardiff some 13 years earlier.

Northern Ireland

The Forensic Science Northern Ireland laboratory (FSNI) has been a voluntary participant in the Custodian's proficiency testing programme for subject samples for several years without any significant issues being raised. Earlier this year the laboratory also successfully completed its accreditation exercises with CAS and was approved as a supplier of subject sample profiles to the NDNAD.

Prior to achieving accreditation, FSNI had accumulated profiles from 36,219 subjects on its own Northern Ireland DNA database. Because of its track record, the NDNAD Strategy Board agreed to the back-loading of these profiles to the NDNAD and FSNI commenced loading them to the NDNAD on 7th September, 2005. In order to distinguish these pre-accreditation profiles from profiles generated after the laboratory was approved, the records were marked on the NDNAD with a PA (pre-accreditation) flag and a caveat was agreed that would accompany any matches involving these profiles to ensure that the police were aware of their provenance.

FSNI commenced loading its post-accreditation subject sample profiles to the NDNAD on 20th October, 2005, and by the end of the year had loaded 2,889 such profiles to the NDNAD.

It is anticipated that during the coming year FSNI will also gain approval to load its crime scene sample profiles to the NDNAD. However, unlike the position with its subject sample analysis, FSNI has not participated in the Custodian's proficiency testing programme for crime scene samples and there is no other evidence of the reliability of FSNI's analysis of crime scene sample profiles and their compatibility with the profiles on the NDNAD, so there will be no back-loading of these historical records to the NDNAD.

Supplier Laboratory Developments continued

Scotland

Forensic science provision in Scotland is undergoing a programme of reorganisation and in April 2007 the Police Forensic Science Laboratories in Aberdeen, Dundee, Edinburgh and Glasgow, along with the Scottish DNA database, will become part of the new Scottish Police Service Authority.

The Scottish DNA Database itself is situated and will remain within Tayside Police Headquarters. It is part of the Dundee Police Forensic Science Laboratory which will also continue to undertake all profiling of subject samples for the eight Scottish forces and the Ministry of Defence Police. Crime scene sample profiles from Scottish laboratories are analysed by the Dundee and Strathclyde laboratories, but the Grampian and Lothian & Borders laboratories are also currently being accredited as suppliers. All crime scene sample profiles are added to the Scottish database in the first instance. A high percentage of matches are made and only those profiles remaining unmatched are added to the NDNAD.

The Scottish database holds in excess of 200,000 DNA profiles from about 193,000 subjects, all of which are also held on the NDNAD. During the year a total of 4,591 crime scene profiles were received and matched 3,126 individuals, giving a 68% crime scene to subject match rate using the local database. The remaining 32% of unmatched crime scene sample profiles were exported to the NDNAD.

In addition, there were 1,432 urgent requests for a speculative search of the Scottish database in relation to serious crime, resulting in 575 suspects being identified.

Case Study

A 31 year old woman was brutally raped and murdered in Glasgow one morning in September 2005. DNA was recovered from her clothing, vaginal swabs and the crime scene from the same male source. A match was obtained via the Scottish DNA database 48 hours after the crime was committed against a profile from an 18 year old local male, which had been loaded to the database several months previously for possession of a weapon in circumstances where a woman was threatened in the same locality.

In December 2005, in North Lanarkshire, a female returning home one evening was approached from behind by a male and dragged into the secluded grounds of a derelict property where she was raped. The profile from the semen on the victim's vaginal swabs matched one from a 17 year old local male whose profile was on the database in relation to a breach of the peace.

A 32 year old man was found stabbed to death in a car park outside a tower block in Glasgow in July 2005. The initial assault took place within the deceased's flat and continued down the stairs of the tower block. The assailant was seen to leave the crime scene in the direction of the local cemetery. An extensive search of the cemetery was carried out and a knife was recovered, which had been partially embedded in the ground. The deceased's blood was identified on the blade of the knife and DNA removed from the knife handle was found to be a

mixture of the deceased's and an unknown male's. The profile from the unknown male was searched against the database and a match was obtained with a profile from a 29 year old man. In February 2006, the man was convicted of murder at the High Court in Glasgow.

In February 2004, a 15 year old girl was abducted, bound and sexually assaulted early one morning in an Ayrshire village. A sock was recovered from the scene and a male DNA profile was obtained from this. Mixed DNA profiles were also obtained from the girl's clothing, part of which corresponded with the profile from the sock. The profile from the sock was loaded to the database shortly after the time of the incident and in April 2005 a match was obtained with a profile from a 44 year old man, who had previously served time in prison for rape. The man subsequently pleaded guilty at the High Court in Glasgow.

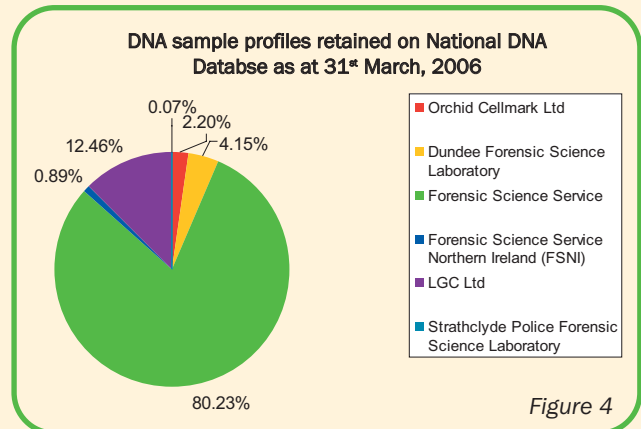
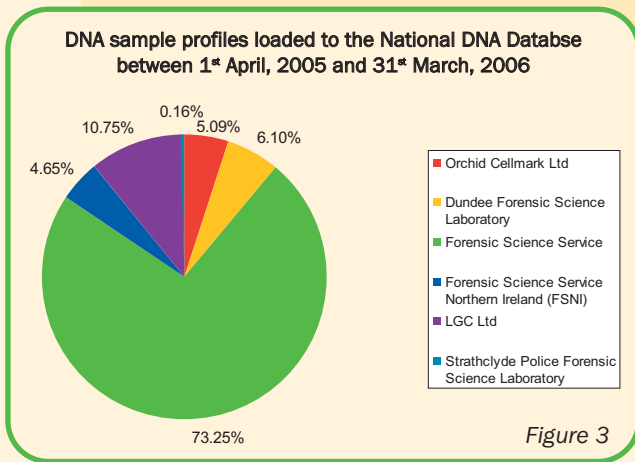
In 1998, two young girls were sexually assaulted by a man within a common close in Glasgow. Semen was subsequently identified on one of the girls' socks. This profile was loaded to the database and in January 2006 a match was obtained with a profile from a man who had provided a DNA sample in December 2005 in relation to a theft.

In 2003, a young girl reported to her mother that whilst coming from the toilets in a Glasgow fast-food restaurant a man had approached her and had licked her forehead. A DNA profile was obtained from the swab of the girl's forehead and in March this year a match was obtained on the database.

Market Share

The current market share of the subject and crime scene sample profiles loaded to the NDNAD during 2005/06 is shown in Figure 3.

The current market share of the subject and crime scene sample profiles retained on the NDNAD at 31 March 2006 is shown in Figure 4.



*This chart was generated in August 2006 and takes no account of profiles removed from the NDNAD since 31 March 2006.

The Provision of National DNA Database Services

Operations and Maintenance Contract

As part of the arrangements for transfer of the NDNAD from the FSS to the Home Office, it was decided that the operation and maintenance of the NDNAD and the PED should be contracted out. It was further decided that, for the first 3 years, the contract should be awarded to the FSS, in order to minimise the risk of any disruption to the services provided to the Criminal Justice System (CJS) during this period of change. The management of this operations and maintenance contract is now one of the key activities of the Home Office Delivery Unit (Fig.1).

Central to the contract is a tightly-defined specification of the NDNAD services to be provided and a suite of 20 key performance indicators (KPIs) against which the Delivery Unit monitors compliance with the contract. These KPIs replace the 3 more simple performance measures that were used previously (see NDNAD Annual Report 2004/05).

The contract KPIs (Fig. 5) can be grouped under the following headings:

- Data Handling
- NDNAD Searching
- NDNAD Reporting
- NDNAD Support

An Operating Service Level is defined for each KPI, and there is a system of financial penalty points which apply if defined performance thresholds are not achieved.

The new arrangements have bedded in satisfactorily during the first 4 months of the contract to the end of March 2006. Details of performance against the KPIs are reported to the NDNAD Strategy Board on a 'by exception' basis. The National DNA Operations Group will also be involved in the near future in monitoring contract performance more generally. Through the Operations Group, the Custodian will also be seeking feedback from forces on the quality of services being provided. This will assist in ensuring that the services are aligned with the changing requirements of the police forces.

Figure 5

		Description	Operating Service Level (OSL)
KPI No.	Requirement Type	KPI / Requirement	
1	DATA HANDLING KPIs 1 – 5	Percentage of URGENT FULL PROFILE loads to NDNAD completed within target time.	100% within 1 hour
2		Percentage of URGENT PARTIAL PROFILE loads to NDNAD completed within target time.	95% within 4 hours
3		Percentage of ROUTINE PROFILE loads to NDNAD completed within target time.	100% within 1 working day
4		Percentage of ROUTINE PROFILE LOADS to PED completed within target time.	100% within 2 working days
5		Percentage of NDNAD and PED records suspended, amended, reinstated or deleted within target time.	100% within 2 working days
6	SEARCHING KPIs 6 – 8	Percentage of URGENT initial one-off search requests completed within target time.	100% within 1 working day of receipt of request
7		Percentage of NON-URGENT initial one-off search requests completed within target time.	100% within 2 working days of receipt of request
8		Percentage of international and specialist search requests and PED checks completed within target time.	100% within specified target
9	REPORTING KPIs 9 – 15	Percentage of NDNAD load and load failure reports issued within target time.	99% within 1 working day
10		Percentage of PED load reports issued within target time.	99% within 1 working day
11		Percentage of load sample failure reports sent to PNC and suppliers within target.	99% within 1 working day
12		Percentage of URGENT match reports issued within target.	100% within 1 hour
13		Percentage of NON-URGENT routine match reports issued within target.	100% within 1 working day
14		Percentage of suspensions, amendments, deletions and reinstatements reported to forces within target.	100% within < 1 working day of notification.
15		Percentage of PED deletions and amendments within target.	100% within 2 working days of notification.
16	SUPPORT KPIs 16 – 20	Percentage of Help Desk calls responded to within target.	90% within 5 minutes
17		Number of severity 1 failures not resolved within 4 hours	0
18		Number of severity 2 failures not resolved within 8 hours	0
19		Number of severity 3 failures not resolved within 7 days	0
20		Target availability of the NDNAD IT system.	100%

National DNA Database Statistics

Introduction

The NDNAD contains over four million sample profile records. Every day thousands of data transactions are executed following receipt of DNA sample profile results. In addition, administrative changes are routinely made which can eliminate profile records from the NDNAD or change them. The NDNAD is in a state of constant flux and it is often only possible to provide a “snapshot” of its contents at the current moment in time.

The NDNAD was not designed with the requirement to provide the wide range of statistical data now required and has limited “in-built” reporting capabilities. Most management information can only be obtained by interrogating the NDNAD using report-specific programming scripts. Typically, a simple report will take an experienced programmer up to one hour to write, whilst a more complicated report can take up to two days to create, and in writing the scripts there is a risk that the requirement will be misinterpreted, leading to the possibility of unreliable information being provided. Also, the NDNAD does not retain any historic information, so, for example, when a record is deleted from the NDNAD, all information related to that record will be removed from the Database tables as well. A simple example of the consequence of this is that if a request is made to report on how many records have been submitted to the NDNAD in a specified historic time period, there will be significant undercounting.

In 2002, in an effort to provide more consistent statistical data, and to overcome the problem of only being able to take a snapshot of the current position on the NDNAD, a Match Reporting Database (MRDB) and a Management Information Database (MID) were created. MRDB contains internally consistent match groups. MID contains details of all record transactions and matches obtained on the NDNAD. When records are removed from the NDNAD, the corresponding records are not removed from the MID, but “flagged” as having been deleted from the NDNAD. This is only possible under the Data Protection Act because, unlike the NDNAD, the MID does not contain demographic information or arrest summons numbers, so the identity of the record owner cannot be established. However, the MID has one major shortcoming, it does not contain any records relating to any transactions which occurred on the NDNAD before April 2002, most significantly deletions.

Some NDNAD related information is also stored on bespoke spreadsheets, which capture workflow that cannot be captured by the NDNAD, MRDB or MID. These are currently the only source of certain data, such as the volume and timing of one-off speculative searches, and the information used for monitoring performance of the FSS against the majority of the NDNAD KPIs established at the commencement of the Operations and Maintenance Contract. The spreadsheets are maintained via manual data entry and will, inevitably, contain inaccuracies because of this.

There are clearly advantages and disadvantages in using data from each of these sources, and information for this Report has been obtained from the NDNAD, MRDB, the MID and the Excel spreadsheets. The Report’s author has used his discretion as to which of the sources to use for each purpose.

In 2006/07, an enhanced NDNAD Audit Trail will be introduced and an exercise is scheduled to take place to assess what further development of the MID is required in order for it to be able to answer the key questions now being asked by stakeholders. This should then lead to more consistent, comprehensive and reliable information being available.

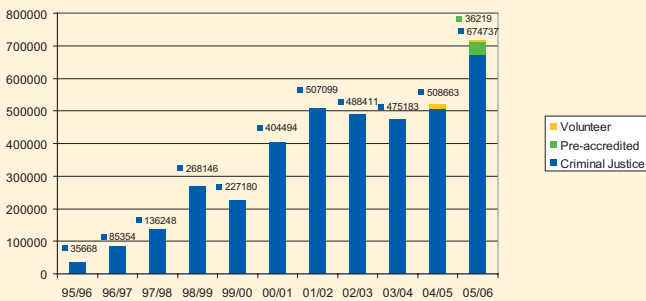
Profiles Loaded to the National DNA Database

Subject Samples

Since 1995, 3,865,429 subject sample profiles have been loaded to the NDNAD.

During 2005/06, 715,239 new subject sample records were added to the NDNAD, an increase of 37.25% on 2004/05.

Number of subject sample profiles loaded to the National DNA Database annually
as at 31st March for all forces



*This chart is slightly different to the one produced last year because the Date Loaded has changed for some records, usually as a result of the records having been removed from the NDNAD and then re-loaded, when the original Date Loaded will have been overwritten with the more recent loaded date, causing historic counts to be reduced.

**Pre-Accredited Subject sample profiles are those transferred from the Northern Ireland database that were obtained prior to FSNI accreditation

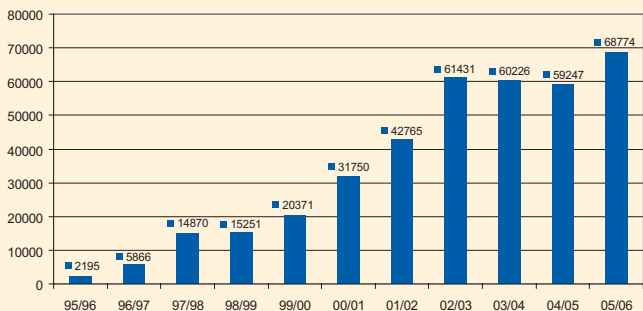
Figure 6

Crime Scene Samples

Since 1995, 382,746 crime scene sample profiles have been loaded to the NDNAD.

During 2005/06, 68,774 new crime scene sample records were added to the NDNAD, an increase of 16% on 2004/05.

Number of crime scene sample profiles loaded to the National DNA Database annually
as at 31st March for all forces



*See note under Fig.6

Figure 7

Profiles Retained on the National DNA Database

Subject Samples

At 31 March 2006, 3,785,571 subject sample records were retained on the NDNAD.

Number of subject sample profiles retained on the National DNA Database

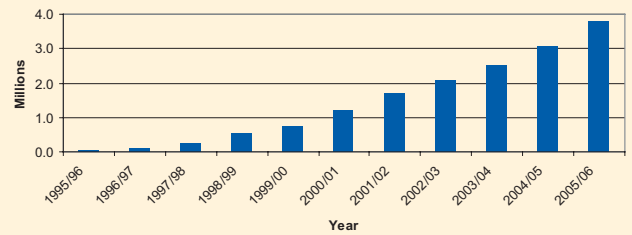


Figure 8

Criminal Justice Samples

3,717,092 of the subject sample records on the NDNAD relate to CJ samples taken under PACE, or equivalent, in respect of offences for which DNA evidence is not an issue. A further 36,165 subject sample records relate to those obtained prior to FSNI's accreditation.

Casework Reference Samples

Some 4,500 of the subject sample records relate to reference samples taken under PACE, or equivalent, for use in cases where there is already a suspect.

Profiles from Casework Reference samples from suspects should always be loaded to the NDNAD, but for a variety of reasons only a fraction of those potentially available are loaded.

National DNA Database Statistics continued

Volunteer Samples

16,038 of the subject sample records relate to volunteer samples.

Most volunteer samples are obtained from victims, third parties or a member of a population identified for an intelligence-led screen, for elimination purposes in relation to the investigation of a specific offence. Prior to 2001 they could only be used for that purpose and the profiles could not be added to the NDNAD. The CJPA 2001 for England, Wales and Northern Ireland changed that. These profiles can now be added to the NDNAD, but only if the person provides separate written consent, and the consent form explains that once such consent is given it cannot then be withdrawn. Equivalent legislation introduced in Scotland in 2003 differed only in that it allowed volunteers to withdraw their consent.

Distribution of subject sample profiles retained on the National DNA Database

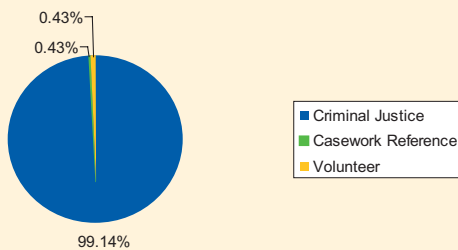


Figure 9

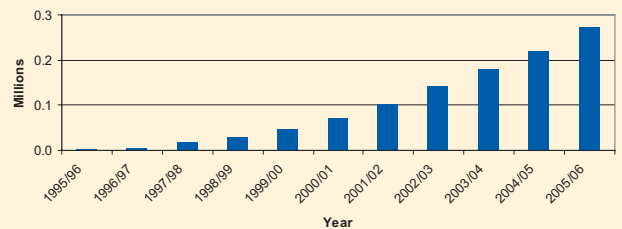
Replicates

It is estimated that about 12% of the 3,785,571 subject sample records retained on the NDNAD are replicates, arising from samples being taken from the same subject on more than one occasion. The number of different subjects represented on the NDNAD at 31 March 2006 was therefore about 3,340,000.

Crime Scene Samples

On 31 March 2006, 271,903 crime scene sample profiles were retained on the NDNAD.

Number of scene sample profiles retained on the National DNA Database



*For an accurate "retained crime scene samples" chart, the information would need to have been recorded at the end of each financial year and it was not. The information has therefore had to be obtained retrospectively and consequently takes no account of deleted and/or reloaded sample records.

Figure 10

Profiles Removed from the National DNA Database

Subject Samples

Between 1995 and 31 March 2006, it is estimated that the number of subject sample records removed from the NDNAD at the request of the police is of the order of 350,000.

Year	Records removed from the NDNAD*
1995	675
1996	12,564
1997	21,587
1998	45,710
1999	68,816
2000	66,149
2001**	44,664
2002	18,499
2003	23,901
2004	19,126
2005	22,605
2006***	4,447

Figure 11

* The figures relate to calendar years and CJ sample records which have been flagged as removed, or removed and then flagged for reload, but which are not on NDNAD at the moment; they do not include casework reference sample and volunteer sample records.

**The CJPA was implemented in 2001

*** Total to 31 March 2006

More accurate figures not available because of the problems associated with the lack of any audit trail.

During 2005/06, 22,132 subject sample records were removed from the NDNAD. Of these, 21,748 related to Scottish samples.

The CIPA 2001 in England, Wales and Northern Ireland removed the obligation on the police to destroy samples and remove their profiles from the NDNAD following a discontinuance or acquittal, but the decision in any particular case on whether the sample should actually be destroyed and its profile removed from the NDNAD or retained is one for the Chief Constable of the force concerned. However, the presumption will always be for retention unless there are 'exceptional circumstances'. Central guidance on what constitutes 'exceptional circumstances' is being prepared to facilitate a consistent approach. Under Scottish law, if there is no prosecution or the person is acquitted, the samples still have to be destroyed and their profiles removed from the NDNAD, except in specific circumstances.

A 16 year old was arrested on suspicion of involvement in an assault and had his fingerprints and a DNA sample taken whilst in custody. His DNA profile was subsequently loaded on to the NDNAD. It later transpired that this arrest was a case of mistaken identity. The Chief Constable of Hertfordshire accepted that the arrest was a case of mistaken identity and, using his discretion, requested that the young person's DNA profile be removed from the NDNAD and that his DNA sample be destroyed. In doing so, he made clear that the removal of the DNA profile from the NDNAD was due to the exceptional circumstances of the case.

Destruction of samples obtained from volunteers who have also consented for their profiles to be added to the NDNAD, and the removal of their profiles from the NDNAD, are subject to the same consideration as for samples and profiles obtained under PACE, except in Scotland where the volunteers can request the police to destroy their samples and remove their profiles from the Scottish database and the NDNAD at any time. There are no plans in Scotland to change this approach not changed in 2001.

Crime Scene Samples

Since 1995, 121,522 crime scene sample profiles have been removed from the NDNAD.

During 2005/06, 30,589 crime scene sample records were removed from the NDNAD.

Crime scene sample profiles are removed from the NDNAD at the request of the police following a conviction for the offence or when a decision has been made that it will not be investigated further.

The NDNAD Strategy Board is currently considering whether to retain all crime scene samples profiles permanently on the NDNAD in future. This would allow all new subject sample profiles to be checked against them, even if a conviction has been obtained for the offence, and so identify other potential suspects who may not have been previously considered, and consequently the risk of a miscarriage of justice.

Analysis of Profiles Retained on the National DNA Database

Subject Samples

Following a Discontinuance or Acquittal

The CIPA 2001 amended PACE to allow DNA samples and profiles to be retained when a person is not prosecuted or is acquitted. However, a modification to the PNC software to enable records of acquitted persons to be retained was not implemented until December 2005. So any records relating to acquitted persons before that date were weeded from PNC, in line with the retention guidelines in place at the time, but forces were advised to retain hard copy records locally to enable the deleted records to be reinstated when the PNC modification was complete.

Arrangements were also made that when the records had been deleted from PNC, the corresponding records on the NDNAD would still be retained and flagged as "Retained Acquittals" to assist with their identification. However, it has been estimated that only about 86% of the records marked as "Retained Acquittals" on the NDNAD were removed from PNC as a result of the person having been not prosecuted or acquitted, the rest being removed from PNC for a variety of other reasons.

National DNA Database Statistics continued

An estimate of the number of acquitted persons with DNA profiles on the NDNAD is thus best obtained by first counting only 86% of the 330,476 sample profile records marked as "Retained Acquittal" and then allowing for an estimated 26% replication rate among these, giving roughly 200,300 persons with records on the NDNAD which would have been removed had the legislation not changed in 2001.

On 4 December 2005, the removal of records from PNC following discontinuance and acquittal ceased. Henceforth, therefore, the "Retained Acquittal" flag will not be utilised on the NDNAD and information related to such individuals will have to be obtained via PNC.

From CJ Arrestees

CJ Arrestees are suspects who have been arrested and released without charge or a caution, and against whom no further action is proposed. They will include persons whom the police are satisfied are innocent of the offences in question, but also, for example, persons against whom a witness is unwilling to give a statement of complaint, as is common in cases of assault, and suspects having an alibi which the police are unable to disprove.

It is not currently possible to determine accurately how many records on the NDNAD relate to CJ Arrestees, but technical changes to the link between the NDNAD and the PNC to enable this information to be captured are under consideration by the Police Information Technology Organisation (PITO).

However, an exercise carried out at the end of November 2005 showed that the number of persons on the NDNAD who had not been charged or cautioned was 139,463 (including 15,116 volunteers). This is a relatively small proportion, around 4.5%, of the 3,085,705 persons with records on the NDNAD at that time.

By Country of Origin

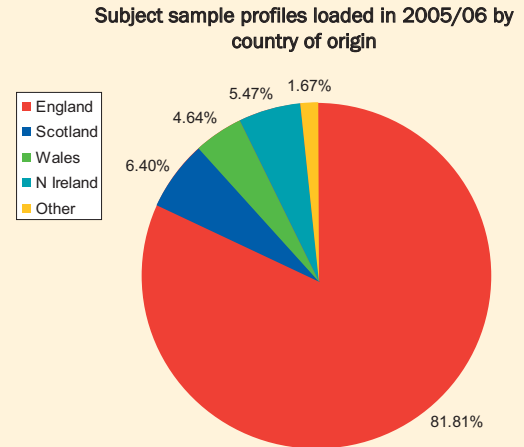


Figure 12

About 36,000 of the subject sample DNA profiles were obtained by the FSNI laboratory prior to its being accredited as a supplier of DNA profiles to the NDNAD (but about which the Custodian is satisfied as to their reliability and compatibility).

During the year the Dundee laboratory exported 46,856 Scottish subject sample profiles to the NDNAD.

By Gender

The gender of subject sample profiles retained on the National DNA Database as at 31/03/06

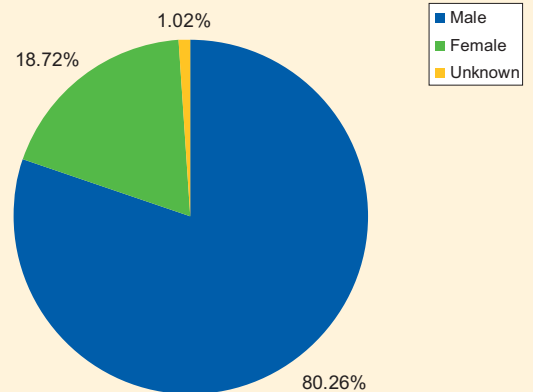


Figure 13

By Age

The age distribution of subjects when sample profile records loaded to the National DNA Database

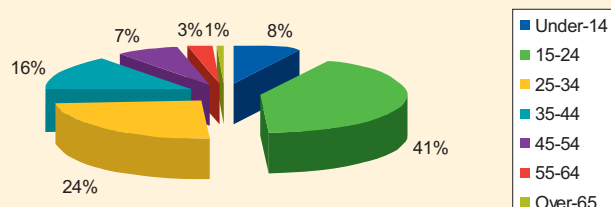


Figure 14

*The figures represent records on the NDNAD, not individuals. There may thus be some duplication, but this should not make any material difference to the proportions.

The age distribution of the population of persons represented on the National DNA Database as at 31/03/06

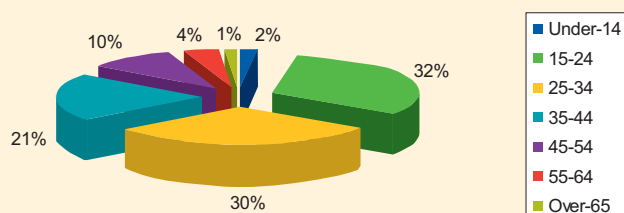


Figure 15

PACE does not distinguish between adults and minors in terms of the taking, retention and destruction of DNA samples and profiles.

An exercise carried out in October 2005, showed that 741,605 of the 3,466,792 subject sample profiles retained on the NDNAD at that time related to people who were under 18 when their sample was obtained.

A further exercise in December 2005 estimated that about 24,000 of the records on the NDNAD related to persons who were under 18 when their samples were obtained and against whom no further action was taken. The breakdown of offences to which these related is shown in Fig. 16.

Offence category	Number of persons under 18 who were arrested for a recordable offence, detained at a police station but not charged or cautioned.
Murder or Manslaughter	23
Rape	288
Other Sexually Related	453
Kidnap	16
Terrorism	1
Drugs	442
Weapon and Firearms	431
Assault (117 of which were racially or religiously aggravated)	4521
Illegal immigration (e.g. Entering UK without leave or Non-patrial Overstaying Leave)	184
Burglary	2718
Destroying or Damaging Property	4878
Theft	3100
Vehicle	2455
Other	4658
Total	24168

Figure 16

National DNA Database Statistics continued

By Ethnic Appearance

The ethnic appearance distribution of records for male individuals as at 31/03/06

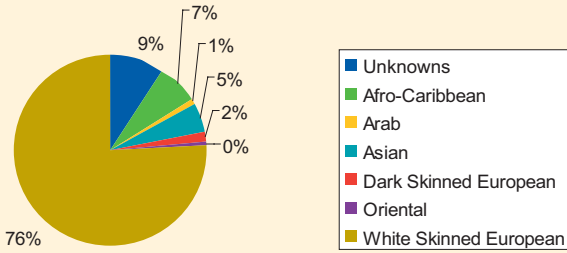


Figure 17

The ethnic appearance distribution of records for female individuals as at 31/03/06

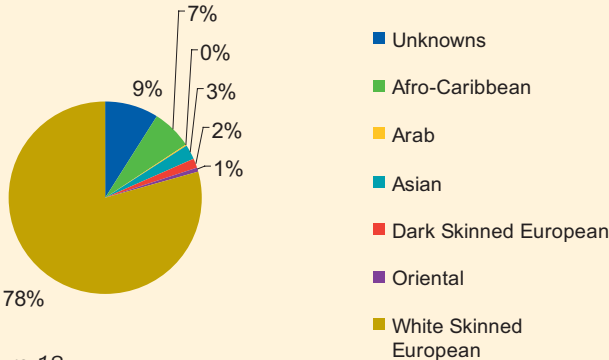


Figure 18

*Ethnic appearance is not normally included in the data submitted from Scotland and accounts for 152,285 (41%) of the 'unknowns'. Until April 2005, the ethnic appearance of volunteers was not recorded; volunteers thus account for a further 15,067 (4%) of the 'unknowns'

Age and ethnic appearance distribution of individuals represented on the National DNA Database as at 31/03/06

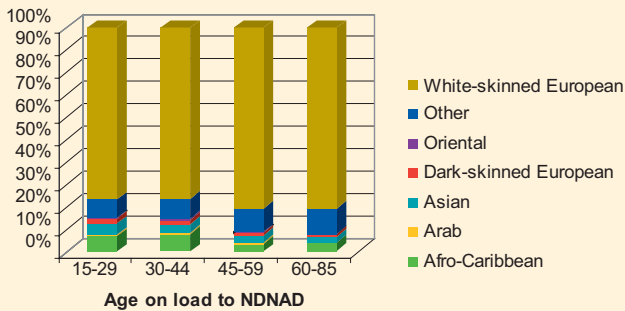


Figure 19

Crime Scene Samples By Offence Type

Serious crime offence profiles loaded to the National DNA Database during 2005/06 (figures in brackets are changed on 2004/05)

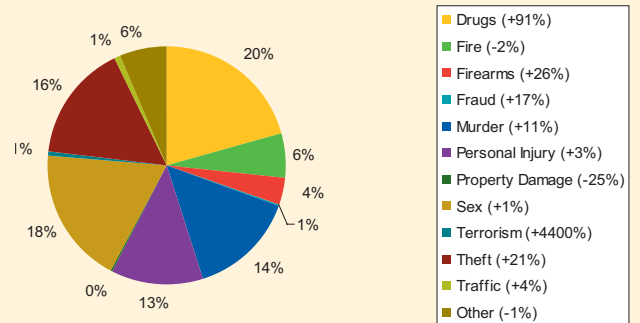


Figure 20

Volume crime offence profiles loaded to the National DNA Database during 2005/06 (figures in brackets are changed on 2004/05)

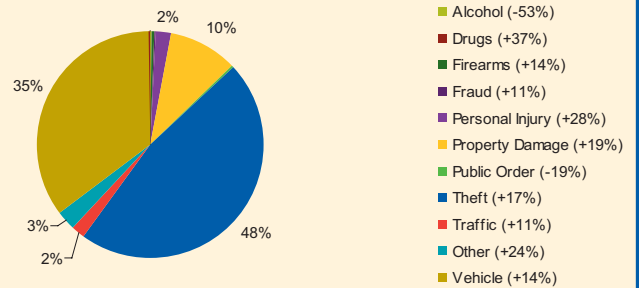


Figure 21

By Country of Origin

Crime scene sample profiles loaded to the National DNA Database during 2005/06 by country of origin

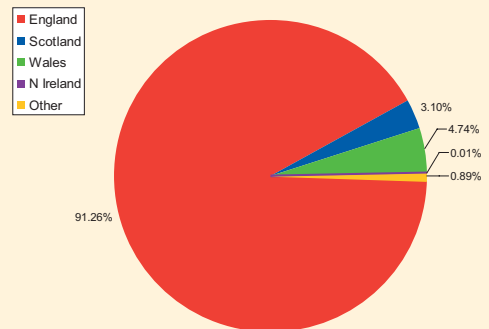


Figure 22

During the year, the Dundee laboratory exported about 1,470 unmatched crime scene sample profiles to the NDNAD.

Matches

Crime Scene to Subject

Matches between a crime scene and a subject are useful in identifying possible suspects for the offence. Since May 2001, 182,612 crime scene profiles have been matched with 165,099 separate individuals*.

* The Annual Report for 2004/05 should have stated that since May 2001, 134,788 crime scene profiles have been matched with 121,737 separate individuals. Due to an error in calculating these figures the wrong data was published.

A single suspect was reported for 132,178 of these match groups. A list of potential suspects was produced for the remainder. The identification of more than one potential suspect as the source of the DNA at some scenes is largely due to the significant proportion of crime scene sample profiles that are partial.

For 2005/06, one or more suspect sample profiles were matched with 49,247 crime scene sample profiles. The total represents an increase of 22.6% on the total number of crime scenes for which one or more suspects were nominated in the previous year.

Of these matches in 2005/06, 134 related to subjects from Northern Ireland, 1,388 to subjects from Scotland and 845 to crime scenes from Scotland.

By Offence Type

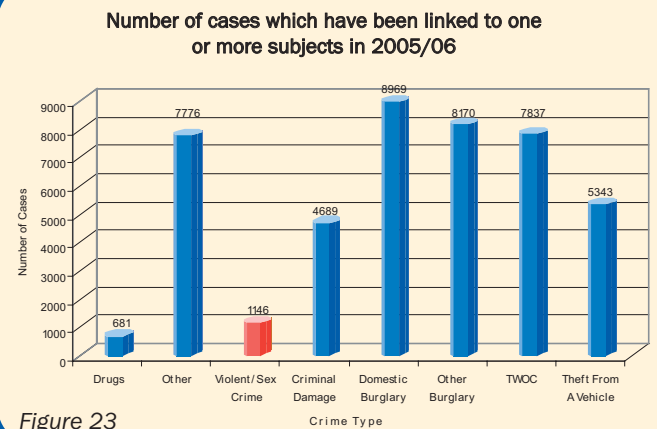


Figure 23

Matches involving profiles from volunteers

During 2005/06, 3,953 new volunteer sample profile records were loaded to the NDNAD. These generated 134 immediate matches with crime scene sample profiles, 61 of which were from undetected crime scenes. The remaining 73 matched to crime scenes that had previously been connected to another subject sample profile on the NDNAD.

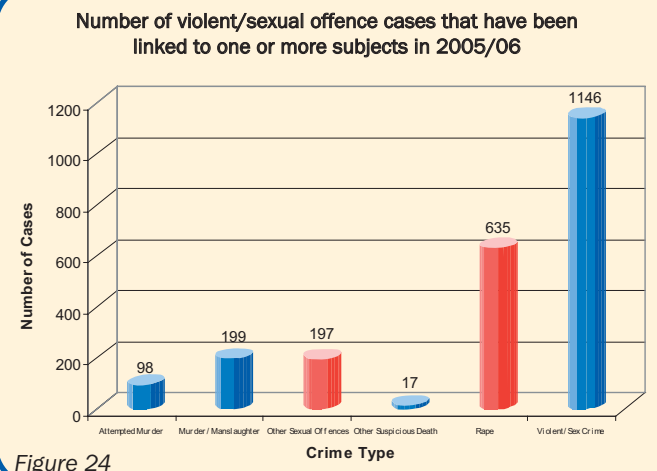


Figure 24

National DNA Database Statistics continued

Matches Involving Profiles Retained under the Criminal Justice and Police Act 2001

Of the 200,300 or so profiles on the NDNAD that have been retained under the CIPA 2001 and would previously had to have been removed, approximately 8,500 profiles from some 6,290 individuals have been linked with crime scene sample profiles from some 4,000 offences. These offences include 114 murders, 55 attempted murders, 116 rapes, 68 sexual offences, 119 aggravated burglaries and 127 of the supply of controlled drugs.

Matches Involving Profiles Retained under the Criminal Justice Act 2003

DNA samples taken from persons who have been arrested but not proceeded against have yielded matches with a crime scene from over 3,000 offences, including 37 murders, 16 attempted murders and 90 rapes.

In relation to the 24,000 CJ Arrestees aged under 18, over 500 of these have been matched to outstanding crime scene sample profiles.

Offence	No of Matches
Murder/Manslaughter	5
Rape	6
Using/Trading in/Shortening/Converting Firearms	1
Abduction and Kidnapping	1
Aggravated Burglary	2
Production of Controlled Drugs	1
Supply of Controlled Drugs	2
Criminal Damage	1
Traffic Offences Non-Fatal	2
Burglary in a Dwelling	12
Robbery Volume	2
Other Burglary	9
Theft inc Handling Stolen Goods	2
Auto-Crime	1
Theft of a Vehicle	9
Theft From a Vehicle	2
Other Vehicle Crime	1
Other Volume	2
Total	61

Figure 25

Crime Scene to Crime Scene

Matches between samples from different crime scenes provide valuable intelligence information on repeat offenders. Since May 2001, 17,285 crime scenes have been linked to other crime scenes as a result of a new crime scene sample DNA profile being added to the NDNAD.

In 2005/06, 4,237 new crime scenes were linked to other crime scenes when DNA profiles from the new crime scenes were added to the NDNAD, very similar to the total number of new crime scene matches for the previous year.

By Number of Scenes Linked

Figure 25 shows the number of crime scenes that have been linked by the same DNA profile (as crime scene sample profile match groups) and the number of crime scene sample profiles that are contained in each match group (since the implementation of MRDB in 2002).

No. of Crime Scene Sample Profiles in the Match Group	No. of Scene to Scene Match Groups
2	5169
3	353
4	82
5	30
6	15
7	7
8	4
9	2
10	8
11	1
12	1
14	1
16	1
41	1
42	1
58	1

Figure 26

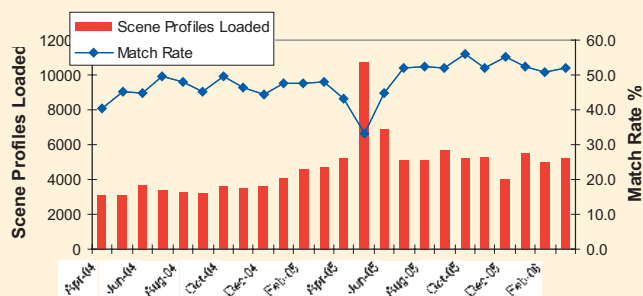
Match Rates

Previously, because the figures were calculated retrospectively, the match rate for any specific period was obtained using the formula $100 \times \text{Matches Obtained} / \text{Sample Profiles Retained}$ on the NDNAD. For 2005/06, the figures have been collected on an on-going month by month basis and it has therefore been possible to replace the denominator with Sample Profiles Loaded to the NDNAD during the month. This should give a more accurate figure as it takes account of profiles that have been removed after loading.

Following Addition of a New Crime Scene Sample Profile

Figure 27 shows a steadily rising increase over the year in the chance of obtaining an immediate match when a crime scene sample profile is added to the NDNAD.

Crime to subject match rate following addition of a crime scene sample profile: April 2004 - March 2006



* The dip in match rate in June 2005 follows from the re-loading of a batch of crime scene sample profiles at the request of the owning force.

Figure 27

At 31st March 2006, the crime to subject match rate following addition of a crime scene sample profile was 52%, up 4% on last year.

Following Addition of a New Subject Sample Profile

Where a crime scene sample profile fails to match with a subject sample profile immediately following its loading to the NDNAD, it remains on the NDNAD and is checked against all new subject sample profiles as they are added to the NDNAD. There has been an

increase in the rate at which subject sample profiles have been added to the NDNAD over the year, partly a result of implementation of the CJA and partly due to replicate sampling following the introduction of the new PACE sampling kits, in order to obtain an 'evidential quality' profile on the NDNAD. Largely as a result of the replicate sampling, the chance of finding a match as new subject sample profiles are added to the NDNAD has fallen.

Crime to subject match rate following addition of a subject sample profile: April 2004 - March 2006

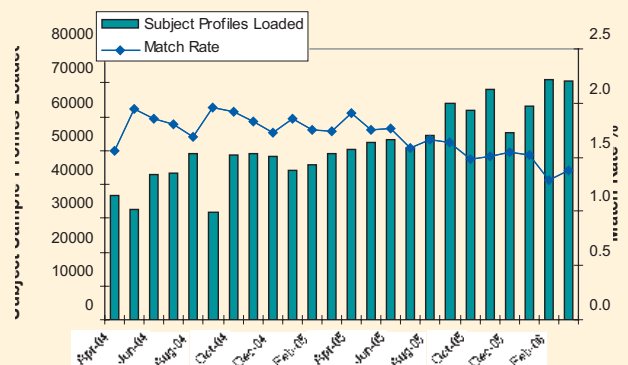


Figure 28

Managing Data Integrity

Custodian Accreditation Services

New Supplier Laboratory Accreditations

Three new sample processing units have been approved to load records to the NDNAD this year. Two of these are Scottish police forensic laboratories and the third is FSNI. One sample processing unit also closed during this year as a result of the supplier consolidating processes across sites.

There has also been much interest from a number of other new private sector organisations seeking approval. Most of these are still at the early stages of consultation with Custodian Accreditation Services (CAS), but two are now part way through the accreditation process.

Changes to Scope

This has been an area of high activity for CAS over the last year, with about 130 working days being committed to the review and assessment of process changes of existing supplier units. These process changes have included the introduction of new instrumentation throughout all stages of the process - from extraction through quantification and PCR to electrophoresis, introduction of new interpretation software, and relocation and expansion of the sample processing units.

On-going Proficiency Testing and Performance Monitoring

It is a requirement that all approved suppliers must participate fully in the Custodian's on-going programme of proficiency testing and performance monitoring. As a result of experience gained to date, it proved possible to introduce a revised quality monitoring framework in 2005/06, rationalising effort in order to concentrate on areas providing best assurance. The main changes were:

- a change in the frequency and number of samples issued for the declared proficiency testing programme for all sample types (quarterly rather than monthly, but 10 samples rather than 5).
- an increase in the number of undeclared proficiency tests issued for the sample processing units (doubled from 2 per year to 4).
- a decrease in the number of process reviews by CAS (from 3 to 1 per annum, for all sample types)

Allied with these changes was increased collaboration with UKAS through involvement of Custodian staff in the audit of supplier laboratories as UKAS technical experts. It is anticipated that, in due course, as the supplier market matures, CAS will be able to build further on this involvement with UKAS to move towards a more on-site laboratory audit and a supplier 'self monitoring' approach.

Central to the new arrangements has also been a move away from the separate annual charging for the declared and undeclared proficiency tests towards 'subscription' charging invoiced in monthly instalments. This 'subscription' charge also provides for an annual quality report, which summarises the supplier's performance across all the accreditation activities during the year

Error Investigation

Figure 29 shows the processes by which errors were identified by CAS and supplier laboratories for both subject and crime scene sample records.

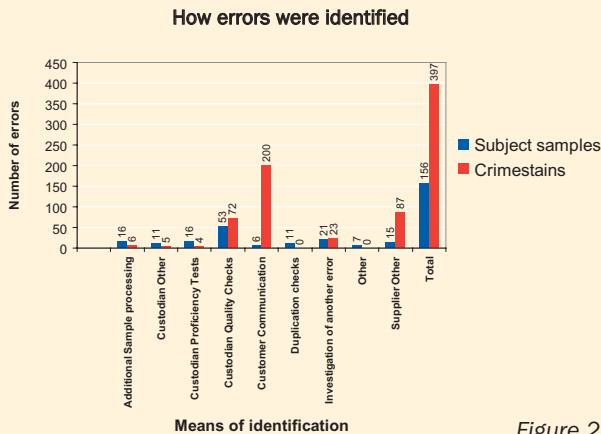


Figure 29

Figure 30 shows the types of error that have occurred with respect to subject sample records as investigated and reviewed by the Custodian.

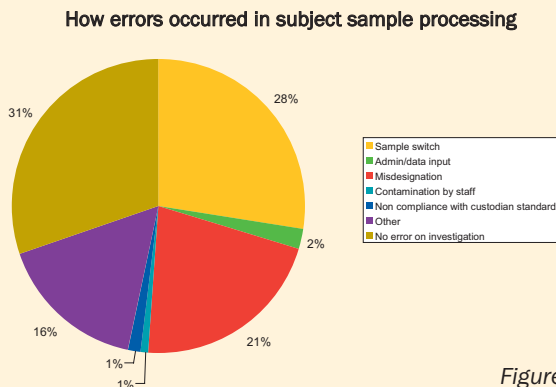


Figure 30

Figure 31 shows the types of error that have occurred with respect to crime scene samples records as investigated and reviewed by the Custodian.

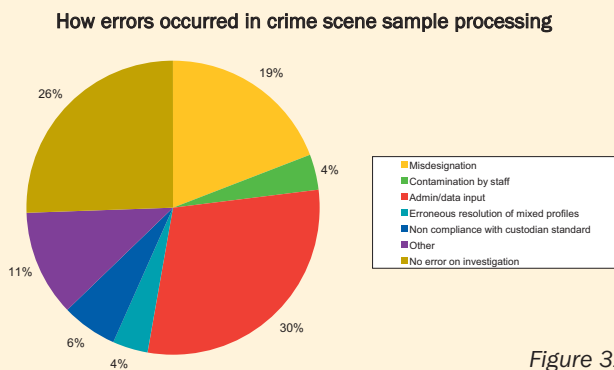


Figure 31

The system used by the Custodian to classify types of error is not ideal. In some instances errors could be classified under more than one type whilst in others they cannot be classified at all, and it gives little useful information to CAS, the supplier laboratories and other organisations with an interest in the integrity of the data held on the NDNAD. A new error classification system has therefore been devised, in consultation with the supplier laboratories, that will allow more detailed information to be collated about, for example, at what point during processing the error occurred, whether it is a systematic error and how common is this type of error. This new system has been run in tandem with the existing system since September 2005, and is currently under evaluation with a view to its being fully implemented by the end of next year.

Duplication of Crime Scene Sample Analysis

When the NDNAD was first established all subjects samples were analysed in duplicate, but as the supplier laboratory systems became more robust this requirement was relaxed and the duplication rate was dropped to a rate of 5 or 10% depending upon the experience level of the laboratory. This was in marked contrast with how crime scene samples were treated, where there has never been any requirement at all for duplication, notwithstanding that such samples are more difficult to analyse.

In order to redress this situation, various proposals for duplication of crime scene sample analysis were discussed at the Suppliers' Group meeting in November 2005, culminating in an agreement that from January 2006 all suppliers of crime scene sample profiles to the NDNAD would:

- introduce 'blind' duplicate analysis of a minimum of 2% of samples covering the full range of sample types processed by the unit;
- carry out the duplication through all stages of the process, from item examination to confirmed profile designation; and
- use the actual casework samples, where possible, or samples prepared from staff donors, for the duplication programme

It was also agreed that CAS would conduct a review of the new system once sufficient data were available to identify best practice.

Managing Data Integrity continued

Data Quality and Integrity Team

There is a link between the NDNAD and PNC specifically for the purposes of allowing stub records to be downloaded to the NDNAD when a record is made on PNC of a DNA sample having been taken and allowing PNC to be updated from the NDNAD when a profile from the sample has been successfully loaded to the NDNAD. The Custodian's Data Quality and Integrity Team (DQIT) periodically carry out joint exercises with the PITO to ensure that the details held on the two databases are properly reconciled. This exercise also highlights sampling and administration errors that have led to records being loaded to NDNAD with incorrect demographic information. To date, the DQIT has rectified 4,109 such errors on PNC and/or the NDNAD.

During 2005/06, the DQIT has also been able to use its expertise and unique access to both databases to assist in resolving other specific issues.

Historic Load Failures

A number of quality checks are carried out when sample profile records are submitted for loading to the NDNAD. If any of these fail, the profile record is rejected and returned to the supplier laboratory for amendment and resubmission. Some of the amendments required can be made by the supplier laboratory alone. Others require the support of the police and access to PNC.

In July 2005, the FSS identified a total of 26,200 profile records that had been returned to them following a load failure between 1995 and 2004 which had not been amended and resubmitted. Around 90% of these had occurred after the NDNAD/PNC link was established in November 2001 when the submission quality requirements were changed.

With the help of the DQIT, approximately 20,000 of these profiles records were amended and successfully loaded to the NDNAD by the FSS between September 2005 and January 2006. A further 5,000 could not be loaded for either technical or legal reasons. The remaining records are subject to discussion between the FSS and those forces that took the samples, as to whether the records should be resubmitted for loading.

The resubmitted load failures have resulted in a total of 1,168 matches, of which 355 were first time matches which have since been reported to the police forces involved for investigation.

In order to prevent any recurrence of this situation, all suppliers that process subject samples for police forces in England and Wales are now required to send to the DQIT a weekly list of their sample profile records which have failed to load to the NDNAD. The DQIT checks these against PNC and returns the required information to suppliers to assist in their resolution and resubmission of the load failures in a timely manner.

Retained Subject Class Code

When a DNA sample is taken from subjects under PACE in England and Wales, a record is created by the police on PNC and part of this is downloaded to create a stub record on the NDNAD. This stub record has two unique identifiers, the Arrest Summons Number (ASN) from PNC and the sampling kit barcode number. These two unique identifiers are provided to suppliers with the samples for analysis, and the suppliers then submit them with the relevant profiles for loading to the NDNAD, where they are used as a quality check to ensure that each profile gets attached to the correct stub record.

In exceptional circumstances (e.g. where the record has been removed from PNC before the sample has been submitted for loading to the NDNAD), a special 'Retained Subject' (RS) class code can be allocated to allow the sample profile to load without its ASN. However, when this RS class code is used the record will not link to PNC and forces will not be able to see the resulting status of the DNA sample record on PNC, and hence whether another sample needs to be taken at the next opportunity, so it is important that suppliers and forces use it only in exceptional circumstances.

There have been instances where the RS class code has been used inappropriately to speed up the loading of sample profiles to the NDNAD if there was a delay in the ASN being issued. The DQIT have investigated these cases and corrected the NDNAD and PNC, where appropriate, to reconcile them.

In future, the DQIT will monitor the use of the RS class code on a monthly basis.

Under 10s

There has been a great deal of interest in the number of young persons with a record on the NDNAD, particularly those who were apparently under the age of 10 (the age of criminal responsibility in England and Wales) at the time their sample was taken. However, investigation of all the records on the NDNAD by the DQIT established that in 322 instances where the dates of birth indicated that the person had been under 10, these were incorrect and the young persons were in fact older. These have now been amended on the NDNAD and/or PNC. The investigation also showed that there were no records on the NDNAD for persons under 10 years of age where the sample has been taken without the consent of a parent or legal guardian (in fact there are no powers for the police to obtain a DNA profile from such persons without such consent).

Prisoner Sampling Programme

The DQIT had its origins in the team assembled in 2003

Offence	Sample Count
Murder/Manslaughter	2
Less Serious Assault	2
Criminal Damage	3
Traffic Offences Non-fatal	5
Burglary in a Dwelling	18
Robbery Volume	4
Other Burglary	8
Theft inc Handling Stolen Goods	2
Aggravated Burglary	2
Theft of a Vehicle	6
Wounding/GBH	1
Theft From a Vehicle	2
RTA Alcohol	1
Drugs Services – Other	1
Other Serious	1
Total	58

Figure 32

to carry out a programme of work to obtain DNA samples from prisoners who had hitherto not provided them. During 2005/2006. The continuing success of this programme has been demonstrated by matches

being obtained from these with 58 crime scene sample profiles on the NDNAD. A breakdown of these matches by offence type is shown in Figure 32.

Replicates

The replicates repository consists of groups of 2 or more matching subject sample profiles. The DQIT has compared the matching profiles in each group with PNC and to date has found 2,056 false/dual identities, 1,392 pairs of identical twins and 2 sets of triplets. This has allowed the police to merge and consolidate their information on the individuals who have previously provided false information, and by updating appropriate PNC records this will ensure that the police are aware of, and can take into account of in their investigations, the existence of identical siblings.

Contamination Elimination Databases

Contamination of samples poses a significant risk to the integrity of the NDNAD. The police, sampling kit manufacturers and supplier laboratories take great precautions to minimise the risk of contamination. The police, sampling kit manufacturers and supplier laboratories (with the co-operation of manufacturers of

various consumables used in the laboratories) have also developed databases of profiles of staff working in their areas who could be the source of contamination, and the supplier laboratories have begun to develop databases of profiles of unknown origin which they have recognised as contaminants. DNA profiles developed in casework for the NDNAD can then be checked against these contamination elimination databases as a precautionary measure.

The PED contains the DNA profiles of police personnel who might be in a position to inadvertently contaminate items required for DNA analysis. It is held separately from the NDNAD and overseen by the Custodian. Police employed at the time the PED was established were asked to volunteer samples for addition to the PED; staff joining later had the provision of such samples as a condition of their employment. Those who provided samples voluntarily can ask for their removal from the PED at any time. Other PED profiles are removed from the PED only at the request of the police force and when the person no longer constitutes a contamination risk. As at the 31st March 2006, 97,739 profiles had been submitted for addition to the PED and 89,401 profiles were still held; the remaining 8,338 profiles had been removed.

Checks of DNA profiles from crime scene samples against the PED can only be made at the request of the senior investigating officer or Scientific Support Manager, against named personnel, and only when it is considered that there is a real risk that one of them could have contaminated the crime scene sample. To date, 263 crime scene sample profiles have been checked against the PED in respect of 941 named police personnel, and full profile matches have been obtained in respect of 53 of the crime scenes.

The supplier laboratories also have Staff Elimination Databases, containing DNA profiles of the staff employed in their laboratories, regular visitors to the laboratories and contractors; Manufacturers Elimination Databases containing DNA profiles from staff employed in the companies manufacturing the consumables used in the DNA analysis process; and databases of unsourced profiles from negative controls and profiles previously demonstrated to have arisen as a consequence of contamination. The supplier laboratories routinely check all profiles generated in casework or for the NDNAD against these databases.

The Custodian DNA/Quality Advisor facilitates cross-searches between the separate supplier databases of unsourced profiles from negative controls and profiles previously demonstrated to have arisen as a consequence of contamination. Suppliers are also actively seeking to expand and share their databases of profiles from their consumable manufacturers, but this is proving difficult due to legal constraints and employment law issues in the countries where the consumable manufacturer is located.

IT Developments

IT Development Programme

Current Projects

The NDNAD IT Development programme was suspended in July 2005 so that new contractual arrangements for delivering the development work could be put in place, aligned to the new NDNAD Operations and Maintenance contract between the Home Office and the FSS (see p26). However, the suspension of the programme also provided the opportunity to take stock of the programme content and a revised 3-year programme was fashioned, based upon a survey of the requirements of key stakeholders of the NDNAD. The key strands of the programme are as follows:

- To further strengthen the security of the NDNAD and 'ring-fence' the NDNAD system from the FSS IT infrastructure
- To pursue initiatives to enhance NDNAD Management Information and Quality Assurance over NDNAD Data Integrity
- To optimise the NDNAD search processes
- To automate the end-to-end NDNAD process – from police sampling, through forensic suppliers, to the NDNAD and match report transmission – in order to improve speed and reduce cost

When IT development work was resumed in early 2006, the main priority was to complete the projects that were in progress when the programme was suspended. This was important not just in terms of realising the planned benefits against the investment already made, but also to free up the NDNAD source code baseline for the subsequent projects. The resumed projects dealt with development of an auto-fax system for delivery of NDNAD match reports and enhancement of the audit trail and NDNAD data model.

The content of the 3-year NDNAD development programme was agreed with the NDNAD Strategy Board in early 2006, as well as the priorities for the first year of the programme. In overview, the initial projects are:

To Enhance the Link Between The National DNA Database and The Police National Computer

Following establishment of the PNC link in late 2001, a number of requests for change (RFC's) geared to improving the system have been identified. Working

closely with PITO, this project provides for delivery of these RFC's as an integrated project. There are a number of important benefits that will accrue, including:

- Improved ability to derive key management information.
- Improved data quality, assisting with resolution of day to day operational issues
- Linking of the NDNAD to the national automated fingerprint system (IDENT 1)

To Enhance Database Security and Separation

This will provide enhanced security and isolate the NDNAD Custodian Business System from that of the FSS on a separate network.

In the context of establishing end-to-end automation (see below), it is also vital to maximise security before putting the new web-services links in place.

To Provide Web Services and End-to-End Automation

Capitalising on the web services technology developed to deliver NDNAD match reports to police forces, the aim of this project is to establish secure connectivity between the NDNAD and supplier laboratories. A range of functionality will be deployed, but starting with simple information flows to prove the system.

As the first step, supplier laboratories will be alerted by transmission of the key sample identifier numbers through the web serviced link that a DNA sample has been taken. The result will reduce data keying (and hence typographical errors) by suppliers, as well as enabling them to be proactive in avoiding load failures when the supplier subsequently sends the profiles for loading to the NDNAD.

To Develop Search and Match Algorithms

One-off speculative searches of the NDNAD for profiles that do not meet the load criteria are time consuming and involve manual data entry, report customisation and exchange of files. This development will allow the supplier laboratories to carry out searches electronically via a web service interface.

This will also provide a foundation for integrating and optimising the core NDNAD match process algorithms incorporating also the search for near miss matches.

Research Requests

Requests for access to samples or data on the NDNAD for research and development purposes are channelled through the Custodian to the NDNAD Strategy Board. The Custodian provides the Board with details of the request together with his observations on the merits of the request for the Board to consider. This process has been made more efficient over the last year by the introduction of a research application pro-forma to ensure that all the information required by the Custodian and Board are provided from the outset. This pro-forma can be obtained by contacting National DNA Database Document control at the Home Office by e-mail (ndnad.document.control@fss.pnn.police.uk).

Figure 33 provides an update of the summary provided to the House of Commons Science and Technology Select Committee of R&D requests that have been made to date.

Update of Table of R&D Requests supplied to the Science and Technology Select Committee (revised 31 March 2006)

From	Requests	Agreed
1 External research requests from universities etc.	6	3
2 Police operational requests relating to specific investigations, including familial searching	5	3
3 Requests to assist forensic service providers for R & D papers, for future use in cases, not specific investigations	19	10
4 Database improvements	2	1

Figure 33

During 2005/06, three new research requests were received by the Custodian. Two of these were rejected. The first was from a supplier organisation wanting anonymised data from the NDNAD in order to carry out robustness testing of a search program, when such data had already been released to the same supplier on an earlier occasion for a similar purpose. The second was also from a supplier organisation, for access to stored DNA samples for research into establishing surname linkages through DNA profiles. The Board rejected this request on the grounds that they saw no police need for the service. The third request, from Centrex, was for data on linked crime scenes, at least one of which involved a sex offence and for which there was no suspect identified, to allow further enquiries to be made using other analysis tools and to produce best practice guidance for investigating unsolved serial crime. This was withdrawn pending submission of a new request from PSU.

International Developments

Building on the successful use of DNA by police forces in the United Kingdom, the Home Office Forensic Science and Pathology Unit and ACPO are working together to add value by improving the use of DNA for cross-border co-operation between national police forces and investigatory authorities.

The United Kingdom is concerned to ensure that such international developments are taken forward in a co-ordinated manner that will ensure that:

- full account is taken of the significant differences internationally in legal powers and data protection requirements relating to the use of DNA for criminal investigation purpose;
- all exchanged data are accurate and reliable, particularly where they have been obtained using different DNA profiling systems;
- the fullest consideration is given to the possible application of data sharing to humanitarian work, such as the identification of the remains of tsunami victims;
- there is maximum inter-operability and avoidance of duplication of development costs; and
- adequate funding is available

During the last year, representatives of the National DNA Operations Group undertook a series of visits across Europe to gain a better understanding of the differences in working practices. This culminated in over 25 countries participating in a seminar to identify the current barriers and the opportunities for improving the exchange of DNA information across Europe.

This UK work is intended to complement other international initiatives on sharing of DNA data in Europe:

- the Hague Programme on strengthening freedom, security and justice in the European Union, which states that with effect from 1 January 2008 the exchange of law-enforcement information should be governed by the principle of availability, which means that throughout the EU a law enforcement officer in one Member State who needs information in order to perform his duties should be able to obtain this information from another Member State, and that the law enforcement agency in the other Member State which holds this information will make it available for the stated purpose, taking into account the requirements of any ongoing investigations in that State; and
- the Prüm Treaty, which currently has 7 signatories among European Union Member States (Austria, Belgium, France, Germany, Luxembourg, Netherlands and Spain) who are committed to sharing DNA profiles via direct access to the national databases of the other participating Member States through a national contact point on a “match/no match” basis.

This also has the support of the G8 Ministers who have noted the importance of utilizing DNA evidence in the investigation and prosecution of terrorist offences and other serious crimes, and urged their experts to continue to examine options to improve the exchange of such data.

The Interpol DNA Database

Interpol has developed a global DNA database and has recently launched direct on-line access to it, via the DNA Gateway, to enable DNA profiles obtained using any of the major DNA profiling systems, including those developed within the EU and United States, to be compared for matches. The DNA Gateway is compatible with the data search engine developed by the signatory countries of the Prüm Convention and with the US Federal Bureau of Investigation's Combined DNA Index System (CODIS). To maintain the highest level of data protection, DNA profiles in the Interpol database are anonymous and member countries retain ownership and control of how the data are used and accessed in accordance with their own national laws.

The UK took part in the development and testing of this system and is now a signatory to the Interpol Gateway.

There are number of cases where offenders might have been arrested earlier if DNA information had been exchanged as a matter of routine in serious sexual crime investigations.

Case Study – Caroline Dickinson's murder

A young school girl, Caroline Dickinson, was brutally murdered whilst on a school trip to France in July 1996. DNA evidence led both to the exoneration of another suspect and the arrest and conviction of her killer, Montes, who received a 30 year jail sentence in 2005. It had taken some nine years to bring the perpetrator to justice. This case highlighted the need for an effective system for the international exchange of forensic data as a matter of routine.

DNA can also be important for identifying offenders or bringing them to justice for a range of other offences, including some arising from illegal immigration.

Case Study – Dover Case

In the summer of 2000, 60 Chinese immigrants, 58 of whom had suffocated to death, were found in a truck in the port of Dover. The truck was Dutch registered and had been en route to Dover from Zeebrugge. DNA profiling was used not only to identify the deceased, but also those many individuals involved in illegal immigration and exploitation of innocent victims. This case was the first example in the Netherlands of the successful foreign exchange of DNA.

More information about the UK work and the case studies is available from the proceedings of a 2005 UK EU Presidency Seminar on this subject which have been published on the Home Office website at http://police.homeoffice.gov.uk/news-and-publications/publication/operational-policing/dna_sharing_europe_seminar.pdf

Financial Statement

	2004/05	2005/06
Custodian Services Income	£1,556,153	£1,251,670
Custodian Services Costs	£1,276,823	£1,245,151
Supplier Accreditation Income	£230,106	£650,281
Supplier Accreditation Costs	£433,828	£459,192

Administration of Custodian finances was carried out by the FSS until the point of separation on 5 December 2005. Thereafter, financial administration was carried out by the Home Office. The above figures for 2005/06 are thus a composite across these two parts of the year

Before separation, the income that the FSS received for Custodian services (Database operational services to the police) consisted of the following three elements:

1. The charge for the Database service in respect of the England and Wales police forces – paid for by the Home Office;
2. Charges to other forces, most notably Scotland – levied to these forces on the basis of profiles loaded;
3. Charges to all forces for specialist work, such as one-off searches of the Database – charged on the basis of the activity involved.

Following separation, income has accrued only from the second and third of these elements. The costs of Database services post-separation have been the charges, invoiced on a monthly basis to the Home Office by the FSS, for delivery of the NDNAD Operations and Maintenance Contract.

As in previous years, the costs of supplier accreditation and monitoring activity have been charged to the supplier laboratories. However, following a detailed time recording exercise of the amount of work involved

in the various elements of the accreditation and quality monitoring activity, a new charging regime was introduced at the start of 2005/06 which better reflects this in the charges levied. Under the new system, suppliers now pay an annual subscription, in monthly instalments, to cover all of the routine accreditation and performance monitoring services provided. Additional charges are made in relation to the investigation of suppliers' unexpected results, and for scrutinising new process accreditations and process changes. These charges are calculated on the basis of a transparent record of the actual time taken by CAS.

The increase in accreditation income for 2005/06 compared to 2004/05 reflects, in part, the impact of the new charging system. However, the income was also inflated significantly by carry-over of income from 2004/05 accreditation activity, which was not invoiced until the early part of 2005/06. A further factor was the unbudgeted income accrued from three unplanned new laboratory accreditations.

Funding for NDNAD IT development has continued to be provided by the Home Office through DNA Expansion Programme funding. However, this activity has been at a low level throughout most of 2005/06 as a consequence of the IT development programme being suspended in July 2005 (see p42).

Glossary

ACPO

The Association of Chief Police Officers, an independent, professionally led strategic body, which in the public interest and in equal and active partnership with Government and the Association of Police Authorities leads and coordinates the direction and development of the police service in England, Wales and Northern Ireland.

APA

The Association of Police Authorities, an organisation set up on 1st April 1997 to represent police authorities in England, Wales and Northern Ireland, both on the national stage and locally. It influences policy on policing and it supports local police authorities in their important role.

ASN

Arrest Summons Number

CAS

Custodian Accreditation Services, part of the Custodian's team responsible for the performance assessment of laboratories applying to become an accredited provider of profiles for the NDNAD and the on-going performance monitoring of the accredited laboratories

CJA

Criminal Justice Act 2003

CJ label

A label attached to items to be used in evidence on which to record who has handled the item and when

CJPA

Criminal Justice and Police Act 2001

CJPOA

Criminal Justice and Public Order Act 1994

CJS

Criminal Justice System

CJ Sample

A non-intimate DNA sample (cheek scrape or hair root) taken under PACE from a suspect arrested, charged, reported or convicted for a recordable offence, primarily for intelligence purposes only. In

exceptional circumstances, if a separate evidential sample cannot be obtained and it is in the interests of justice, the Chair of the National DNA Database Board may authorise its use for evidential purposes. CJ sample profiles are added to the National DNA Database.

CODIS

Combined DNA Index System, a DNA profiling system, used in the USA and some other countries around the world, based on 16 STR markers

CPS

The Crown Prosecution Service, the Government Department responsible for prosecuting criminal cases investigated by the police in England and Wales

DNA

Deoxyribonucleic acid, a substance found in most cells of all people, and in the cells of animals, plants and other organic matter. Variations in the DNA code are responsible for physical differences between individuals including their sex, height and hair and eye colour. Except for identical siblings, each person's DNA is unique.

DQIT

Data Quality and Integrity Team, part of the Custodian's team responsible for reconciling data differences between the NDNAD and PNC

eDNA

A system for the automated electronic deliver of match reports from the NDNAD

ENFSI

European Network of Forensic Science Institutes

FAL

Forensic Alliance Ltd., a private sector company providing a complete range of services across all areas of mainstream forensic science, including DNA analysis in partnership with Orchid Cellmark, now merged with LGC Ltd. as LGC Forensics

FRV

Forensic Response Vehicle, a mobile laboratory of FSS Ltd.

FSNI

Forensic Science Northern Ireland laboratory

FSS

The Forensic Science Service, an Executive Agency of the Home Office

FSS Ltd.

The FSS as a GovCo

GovCo

A Government-owned, private sector company

HGC

Human Genetics Commission, an advisory body set up by the UK Government at the end of 1999 to consider the public interest issues in relation to developments in genetic science

IDENT 1

A platform for the next generation of identification services for the police service, introduced by PITO during 2005, which hosts the national collection of 6 million fingerprint records

KPI

Key performance indicator

LCN DNA

Low copy number DNA analysis. A very sensitive DNA analysis system designed to obtain a DNA profile from samples containing extremely small amounts of DNA. It is mostly used in high profile, serious crime cases where conventional DNA systems have failed to give a profiling result.

LGC

Laboratory of the Government Chemist Ltd, a private sector, science-based service company providing chemical, biochemical and DNA based analysis.

LGC Forensics

The body resulting from the merger of FAL Ltd. with LGC Ltd. to provide a comprehensive range of forensic science services to law enforcement agencies in England and Wales

Glossary continued

MID

Management Information Database

MRDB

Match Reporting Database, a repository of all matches reported from the NDNAD as groups of internally consistent matching DNA profiles

NDNAD

National DNA Database

NPIA

National Police Improvement Agency

NSPIS Custody

National Strategy for Police Information System, a product designed to enable granular access control, maintain data integrity and facilitate data sharing in a secure manner by police forces

PACE

Police and Criminal Evidence Act 1984

PCR

Polymerase Chain Reaction, a biochemical process for multiplying segments of DNA many millions of times through the action of the enzyme DNA polymerase

PED

The Police Elimination Database, distinct and separate from the NDNAD, containing DNA profiles of police officers, crime scene examiners and police ancillary personnel. It is used when requested by the senior investigating officer to help identify instances where DNA has been inadvertently left at the scene of crime during the investigation of the offence and the recovery and dispatch of crime scene samples to the laboratory for analysis. Since 1 April 2003, police regulations have required all new police recruits to the service to provide a sample for the PED.

PITO

The Police Information Technology Organisation, a non-departmental public body providing procurement advice and IT and communication systems to the police service and criminal justice organisations in the UK

PLS

A technique for identifying individual DNA profiles that are contained within a two-component mixed DNA profile and prioritising these for searching against the National DNA Database

PNC

The Police National Computer, which holds extensive data on criminals, vehicles and property and is accessible from over 120,000 terminals across the country. In particular, it contains details of persons from whom DNA samples have been taken under PACE. A subset of these details is transferred electronically to create a stub record on the NDNAD to which the DNA profile is subsequently attached.

PSU

The Home Office Police Standards Unit, set up by the Home Secretary in July 2001 and forming a vital part of the Government's police reform agenda. PSU measures and compares the performance of Basic Command Units and local partnerships, identifies the underlying causes of performance variations, and identifies and disseminates good practice and support to those who need assistance.

Quad

The first STR DNA profiling employed by the FSS, simultaneously analysing for 4 markers in the non-coding regions of DNA to produce a DNA profile with an average match probability of about 1 in 40,000

RS class code

A 'Retained Subject' code on the NDNAD used to allow profiles to load without an ASN

SGM

The Second Generation Multiplex DNA profiling system, introduced in 1995, which allows the simultaneous analysis of six non-coding STR regions of DNA (12 markers or alleles) and a gender marker to produce a DNA profile with an average match probability of about 1 in 50 million. SGM was the original DNA system used for the National DNA Database.

SGM Plus

The DNA system in current use for the National DNA Database. This system is compatible with SGM, but more discriminating. It allows the simultaneous analysis of the SGM markers and an additional 8 STR markers or alleles from 4 further non-coding STR regions of DNA to give a DNA profile with a match probability of less than 1 in 1,000 million. SGM Plus® is a registered trade mark of Perkin Elmer Corporation.

SLA

Service level agreement, a document containing the aims of the agreement and what each party is required to do in order for the aims to be achieved

SLP

Single locus probe DNA profiling

SOCPA

Serious Organised Crime and Police Act 2005

STR

A Short Tandem Repeat of the non-coding region of DNA that is repeated, end to end. Different people have different numbers of these repeats and hence different lengths of repeated DNA. The STR profiling technique examines the lengths of these repeat units and converts the lengths into a digital output.

UKAS

The United Kingdom Accreditation Service, the sole national accreditation body recognised by Government to assess, against internationally agreed standards, organisations that provide certification, testing, inspection and calibration services

XML

Extensible Markup Language, its primary purpose being to facilitate the sharing of data from documents containing structured information across different systems, particularly systems connected via the Internet.

National DNA Operations Group

Chairman	
ACC Stuart Hyde	Assistant Chief Constable (Crime), West Midlands Police
Members	
Mr Mark Bates	Head of Forensic Services, North Yorkshire Police
Mr Alan Chalkley	DNA Services Manager, Metropolitan Police Service
Mrs Amanda Cooper	SSM, Thames Valley Police
Mr Bob Fousert	SSM, Devon and Cornwall Constabulary
Dr Kath Mashiter	SSM, Lancashire Constabulary
Mr Jim McQuillan	SSM, Police Service Northern Ireland
Mr Peter Merrill	SSM, SOCA
Dr Helen Williamson	SSM, Cambridgeshire
Supt Andy Adams	PITO
Mrs Joanne Ashworth	Head of Physical Evidence, National Centre for Policing Excellence
Mr Geoff Dexter	Business Development, Derbyshire Constabulary
Mr Keith White	Project Officer, ACPO DNA & Fingerprint Retention Project
DI Katrina Morton	Forensic Staff Officer to CC Tony Lake
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Mr Bob Green	PSU, Home Office
Mrs Joy Curwen	FSS Ltd.
Mr Paul Hackett	FSS Ltd.
Mr Alan Matthews	FSS Ltd.
Mr Ric Treble	LGC Ltd.
Mr Matt Greenhalgh	Orchid Cellmark Ltd.
Mr Tom Ross	DNA Database, Tayside Police
Secretary	
Mr Nicholas Apps	Secretariat

National DNA Database Suppliers Group

Chairman	
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Mr A Blick	FSS Ltd
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Mr M Peutherer	FSS Ltd
Mr W Childs	Orchid Cellmark Ltd
Mr M Greenhalgh	Orchid Cellmark Ltd
Mr S Bardill	LGC Ltd
Ms M Barratt	LGC Ltd
Mr I Johnston	LGC Ltd
Ms C Saunders	LGC Ltd
Mr R King	Key Forensics
Ms S Cockayne	Grampian Police FSL
Mr S Ferguson	Lothian & Borders Police FSL
Mr M Simmons	Lothian & Borders Police FSL
Ms L Lee	Straythclyde Police FSL
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Mr D Inglis	Tayside Police FSL
Mr W Cooke	FSNI
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