



# **Review of the Federal Bureau of Investigation Laboratory's Forensic DNA Case Backlog**

U.S. Department of Justice  
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## Introduction

Forensic DNA casework testing involves the identification and evaluation of biological evidence using DNA technologies. Forensic DNA analysis is an important tool in law enforcement and counterterrorism investigations. DNA analysis can be used to implicate or eliminate a suspect, solve cases that had previously been thought of as unsolvable, link evidence from different crime scenes, or aid in the identification of victims.

Forensic DNA can be obtained from crime scenes or evidentiary items such as envelopes, clothing, and drinking glasses and compared to samples collected from known persons in an attempt to identify a perpetrator to a crime. A single forensic case can contain multiple pieces of evidence, each of which may yield several samples. For example, in a sexual assault case, DNA evidence left behind by a perpetrator may be collected from the victim's body, clothing, and the physical location where the assault occurred.

In addition to collecting forensic DNA evidence from crime scenes, evidentiary items, or victims, DNA samples can be collected from persons who have been charged or convicted of certain crimes. These convicted offender DNA samples are uploaded into the Combined DNA Index System (CODIS) to be compared with DNA profiles generated from evidence collected from crime scenes and victims in an attempt to identify potential perpetrators.<sup>1</sup>

The Federal Bureau of Investigation Laboratory (FBI Laboratory) conducts analyses of forensic DNA cases as well as of convicted offender samples. However, the FBI Laboratory has backlogs in conducting analyses in both areas.

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<sup>1</sup> CODIS is a database of local, state, and national DNA profiles from convicted offenders, unsolved crime scene evidence, and missing persons. Every state has a statutory provision establishing a DNA database that allows for the collection of DNA profiles from offenders convicted of particular crimes. CODIS software enables local, state, and national law enforcement crime laboratories to compare DNA profiles electronically, thereby linking crimes to each other and identifying suspects by matching DNA profiles from crime scenes with profiles from convicted offenders. As of April 2010, there are over 8.5 million offender and forensic profiles in the National DNA Index System, which is the national database in CODIS.

The FBI Laboratory's backlog in analyzing and uploading convicted offender samples is mainly caused by recent federal legislation that expanded the scope of DNA sample collection from violent convicted federal offenders to include anyone who commits a federal offense as well as non-U.S. citizens who are detained in the United States.<sup>2</sup> State and local forensic laboratories are also experiencing backlogs in analyzing and uploading convicted offender DNA samples. Among other measures, the backlogs at the state and local level have prompted the federal government to initiate grant programs to reduce the number of backlogged convicted offender samples nationwide.<sup>3</sup>

According to the FBI, at its height in 2009, the convicted offender sample backlog contained over 300,000 samples.<sup>4</sup> Despite the increase in the number of convicted offender samples that are collected, the FBI Laboratory has reduced the size of its convicted offender backlog by implementing automated processes to analyze the samples. In addition, the FBI stated that it was able to reduce the backlog by shifting between 5 and 9 casework positions to address the skyrocketing convicted offender demand. As a result, the FBI Laboratory anticipates eliminating the convicted offender backlog completely by September 2010.

In contrast to the decreasing size of its convicted offender backlog, the FBI Laboratory's backlog of forensic DNA cases is large and growing. Forensic DNA testing is more complex, time consuming, and it does not lend itself to the same level of automation that can be used for testing convicted offender samples. Because of the persistent backlog in the FBI Laboratory's forensic DNA case backlog, the U.S. Department of Justice Office of the Inspector General (OIG) initiated this review to examine the Laboratory's efforts to reduce its forensic DNA case backlog. Our review also examined the amount of time contributors wait to receive DNA test results for forensic DNA cases.

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<sup>2</sup> Legislation that expanded the scope of DNA collection includes the 2001 *U.S. Patriot Act*, which added qualifying offenses to the collection of DNA samples from convicted offenders; *The Justice for All Act* of 2004, which expanded the offenses for convicted offenders to include any federal offense; and *The DNA Fingerprint Act* of 2005, which directed that the Attorney General may collect DNA samples from individuals who are arrested or from non-United States persons who are detained under the authority of the United States.

<sup>3</sup> For example, the Department of Justice's Convicted Offender DNA Backlog Reduction Program provided \$32 million in grant funding from fiscal years 2005 to 2009 to help states reduce the backlog of convicted offender DNA samples.

<sup>4</sup> According to the FBI, the number of convicted offender samples received rose from 7,833 in 2004, to 73,635 in 2005, to 99,215 in 2006, to 75,294 in 2007, to 76,932 in 2008, and 96,973 in 2009.

## **FBI Laboratory Forensic DNA Analysis**

The FBI Laboratory plays an important role in the analysis of forensic DNA cases. Contributors from FBI field offices, other federal agencies, United States Attorney's Offices, and state and local agencies that do not have a forensic laboratory in their jurisdiction send cases for forensic examination to the FBI Laboratory. The FBI Laboratory provides forensic examinations and reports, technical support, expert witness testimony, and training to federal, state, and local law enforcement agencies.

The FBI Laboratory is comprised of nine caseworking units, two of which perform DNA analysis.<sup>5</sup> The Nuclear DNA Unit primarily examines biological fluid stains, such as blood and semen, whereas the Mitochondrial DNA Unit tests evidence that is not suitable for nuclear DNA testing, such as naturally shed hairs, hair fragments, bones, and teeth. Cases within the Nuclear and Mitochondrial DNA Units are broken down into program types included in Exhibit 1.<sup>6</sup>

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<sup>5</sup> The nine caseworking units are the Nuclear DNA, Mitochondrial DNA, Trace Evidence, Firearms and Toolmarks, Latent Print Operations, Questioned Documents, Chemistry, Cryptanalysis and Racketeering Records, and Explosive Units.

<sup>6</sup> A nuclear DNA profile will generate a profile that identifies an individual with almost 100 percent accuracy, while unique identifications to an individual are not possible using a mitochondrial profile. Mitochondrial DNA profiles only link individuals' maternal lineage.

## EXHIBIT 1: PROGRAM TYPE DEFINITIONS

Program	Definition
Criminal	Traditional FBI law enforcement jurisdiction, such as violent crime, public corruption, organized crime, and civil rights violations
Missing Persons	Cases in which DNA profiles of missing- and unidentified-persons remains are compared to biological relatives for identification
Indian Country	Cases consisting of evidence from federally recognized tribes, including death investigations, child sexual and physical abuse, violent felony assault, drugs and gangs, and financial crimes
District of Columbia Metropolitan Police Department (MPD)	Currently being outsourced to a private laboratory, but were completed by the FBI in the past
Terrorist Explosive Device Analytical Center (TEDAC)	Improvised Explosive Devices sent from warzones worldwide as a means to gather intelligence <sup>7</sup>
Intelligence (INTEL)	Counterterrorism cases, including domestic terrorism, INTEL cases exclude TEDAC cases

Source: The FBI Laboratory

The forensic DNA case backlog at the FBI Laboratory can have significant effects. Backlogs may delay legal proceedings that are waiting on the results of DNA analysis. Backlogs can also prevent the timely capture of criminals, prolong the incarceration of innocent people who could be exonerated by DNA evidence, and adversely affect families of missing persons waiting for positive identification of remains. Additionally, delays may increase the costs to contributors who must turn to private laboratories for testing because the FBI Laboratory is not able to produce timely results.

As detailed below, the FBI Laboratory has a significant forensic DNA case backlog, and the backlog is growing. During our review, we found issues that we believe affect the FBI Laboratory's ability to reduce the backlog. Because of the importance of these problems, we are providing the

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<sup>7</sup> TEDAC was conceived in response to the need to combat improvised explosive devices (IED) in Iraq and Afghanistan. According to the FBI, the mission of TEDAC is to coordinate and manage the unified effort of law enforcement, intelligence, and military assets for the forensic and technical exploitation of IEDs of interest to the U.S. government worldwide, in an effort to provide actionable intelligence to the offensive missions against terrorism and to the Force Protection mission. For example, DNA analysis may help determine the source of the device. According to the FBI, TEDAC submissions to the FBI Laboratory's DNA units grew from 273 in 2005 to 525 in 2009.

FBI with our findings and recommendations to help it address these findings expeditiously.<sup>8</sup>

## **OIG Results in Brief**

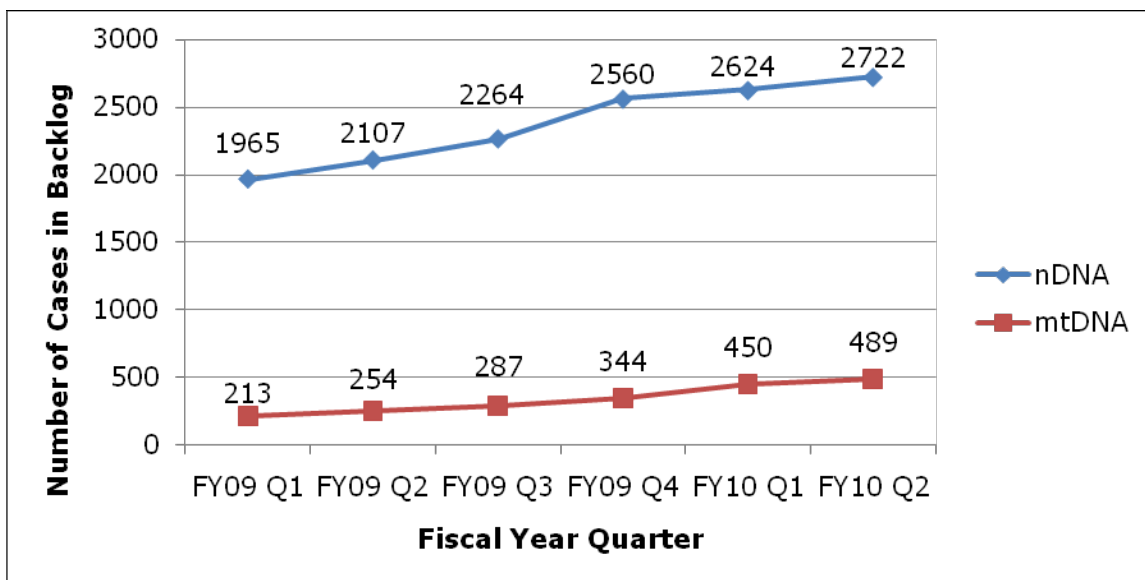
Our review determined that as of March 2010, the FBI Laboratory had a backlog of 3,211 forensic DNA cases. Given the FBI Laboratory's current rate of work, no new staff, and without any new cases, it would take the FBI Laboratory about 2 years to eliminate its existing forensic DNA case backlog. According to the FBI they are in the process of bringing on board 17 additional forensic examiners; however, hiring and training the new personnel could take significant time (12-18 months for training personnel new to DNA examination) and therefore would not have a significant impact on the current backlog for almost two years. As of March 2010, over 2,700 nuclear DNA cases and almost 500 mitochondrial DNA cases were backlogged.

In addition, quarterly backlog reports from both the Nuclear and Mitochondrial DNA Units of the FBI Laboratory from fiscal year (FY) 2009 through the second quarter of FY 2010 indicate that the backlog of DNA casework samples is increasing, as illustrated in Exhibit 2.

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<sup>8</sup> Because this is a technical assistance report rather than a full-scale audit report, it is not intended to comply with the U.S. Government Accountability Office's Government Auditing Standards. We intend to follow up on these interim findings to assess the FBI's progress in addressing the issues identified in this report.

**EXHIBIT 2: NUMBER OF CASES IN BACKLOG  
BY UNIT FOR FYs 2009 – 2010**

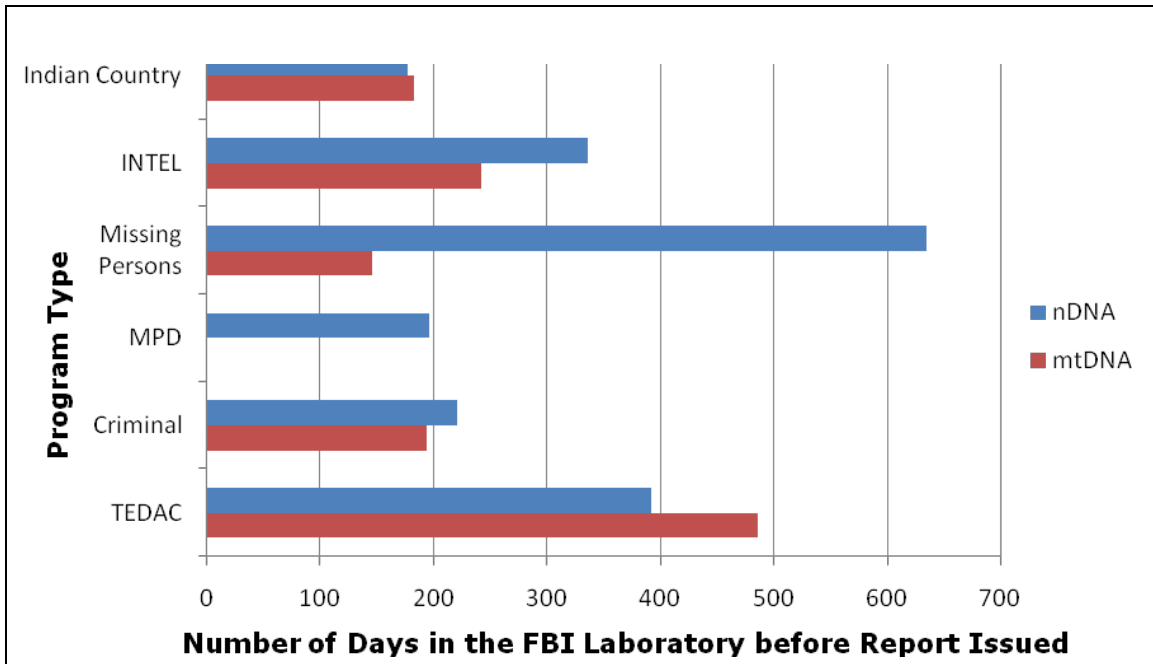


Source: The FBI Laboratory, Nuclear (nDNA) and Mitochondrial DNA (mtDNA) Units' case management systems

We found that the backlog of cases in the Nuclear DNA Unit has grown by almost 40 percent (757 cases) from the first quarter of FY 2009 through the second quarter of FY 2010. Additionally, in the Mitochondrial DNA Unit, the backlog has grown by almost 130 percent (276 cases) during the same time period.

As a result of the backlog, the time it takes the FBI Laboratory to return results to contributors is lengthy. Exhibit 3 summarizes the average time from case submission to the FBI Laboratory until unit results are issued to contributors, separated by case program type. Depending on the program type, the length of time for contributors to receive DNA case results after submission of evidence varies from approximately 150 days to over 600 days.

**EXHIBIT 3: FYs 2008 - 2009 AVERAGE TIME FROM EVIDENCE SUBMISSION UNTIL REPORT BY PROGRAM TYPE<sup>9</sup>**



Source: The FBI Laboratory, Nuclear (nDNA) and Mitochondrial DNA (mtDNA) Units' case management systems

While the demand on the FBI Laboratory to conduct forensic DNA testing has increased substantially, the FBI Laboratory has struggled to increase its capacity to meet this growing demand. As part of the FBI's efforts to reduce the forensic DNA case backlog and minimize workflow bottlenecks, the FBI Laboratory is pursuing various strategies, such as laboratory information management system implementation, strategic management, human resource, and outsourcing. However, these strategies are ongoing and have not yet reduced the forensic DNA case backlog at the FBI Laboratory.

We also determined that the absence of a modern laboratory information management system at the FBI Laboratory has hindered its ability to keep pace with the demand for its services. Since September 2003, the FBI has spent over \$10 million on developing a laboratory

<sup>9</sup> Due to the limited number of submissions, the Mitochondrial DNA Unit does not capture or report statistics separately for the District of Columbia Metropolitan Police Department. These statistics are included as a part of the Criminal case statistics within the Mitochondrial DNA Unit.



information management system.<sup>10</sup> Over 6 years later, such a system is still under development and the FBI Laboratory is incapable of generating an electronic chain-of-custody document, tracking laboratory-wide evidence workflows, and producing laboratory-wide statistical reports to identify problems and delays.

In another effort to help reduce the backlog, the FBI Laboratory has implemented outsourcing agreements with both public and private laboratories. While some of the outsourcing efforts are in development, others have been in place for several years. However, thus far, these agreements have not reduced the forensic DNA backlog at the FBI Laboratory.

The following sections of this report provide more detail on these findings.

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<sup>10</sup> In September 2003, the FBI awarded JusticeTrax, Inc. a contract to implement a laboratory information management system. In March 2006, the FBI terminated the contract with JusticeTrax due to the contractor's inability to meet specific FBI security requirements. This resulted in an overall loss of nearly \$1.2 million. In June 2005, the FBI Laboratory started to pursue another software package and, as of March 2010, has spent nearly \$8.9 million on this new laboratory information management system, which is still under development.

## **FBI Laboratory Performance Statistics**

When requesting forensic analysis services from the FBI Laboratory, contributors send cases, which are comprised of multiple pieces of evidence, to the FBI Laboratory's Evidence Control Unit.<sup>11</sup> The Evidence Control Unit creates an examination plan that lists which items should be forwarded to which examination unit. The forensic examiner in each examination unit determines what type of forensic testing is required for each piece of evidence within a case. Evidence can require testing in multiple caseworking units, but some pieces of evidence from a case may not require any DNA testing.

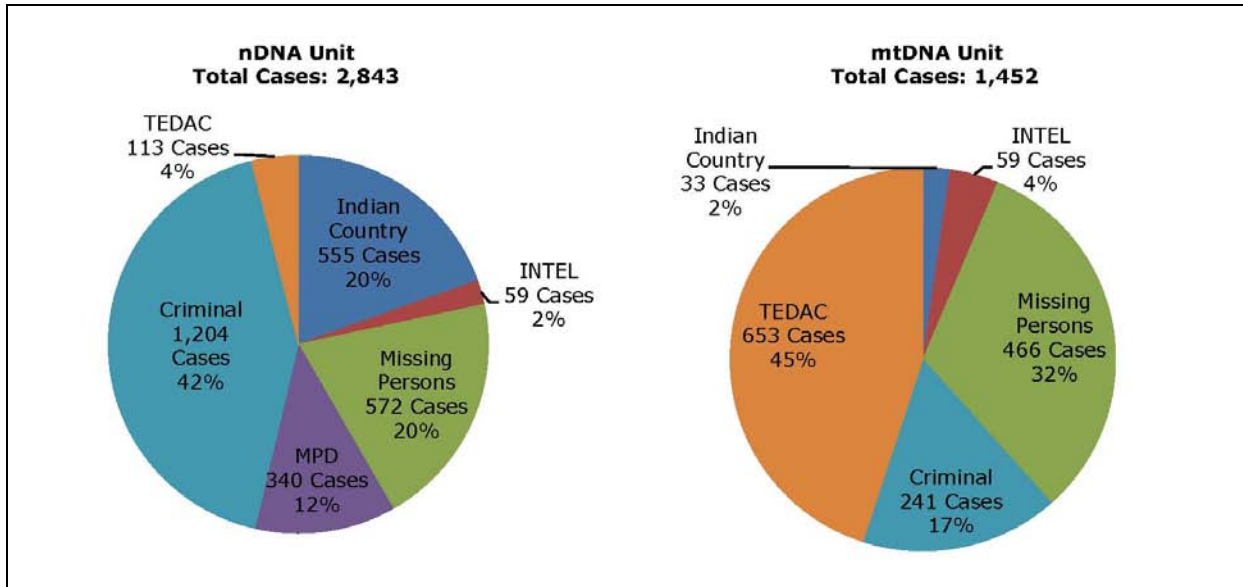
Evidence Control Unit personnel physically transport evidence to and from the caseworking units for testing and maintain a paper-based chain-of-custody to record inter-unit exchange of evidence. Evidence sent to a DNA unit is tested by a unit biologist, and a unit examiner analyzes test results and issues a report to the case contributor.

Determining backlog statistics and tracking cases through the FBI Laboratory is labor intensive because the FBI's evidence tracking system is not automated. To determine a DNA unit's work distribution by program type, we obtained case listings from the Nuclear and Mitochondrial DNA Units. We calculated that in FYs 2008 and 2009, the Nuclear DNA Unit received 2,843 cases, and the Mitochondrial DNA Unit received 1,452 cases. The bulk of the Nuclear DNA Unit's workload is made up of criminal cases, while the majority of the Mitochondrial DNA Unit's workload is made up of TEDAC cases. Exhibit 4 illustrates cases the Nuclear and Mitochondrial DNA Units received for the 2-year period, broken down by program type.

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<sup>11</sup> TEDAC cases are not handled through the Evidence Control Unit; instead, they are delivered directly to caseworking units by TEDAC personnel.

**EXHIBIT 4: CASES RECEIVED PER PROGRAM  
FOR FYs 2008 – 2009<sup>12</sup>**

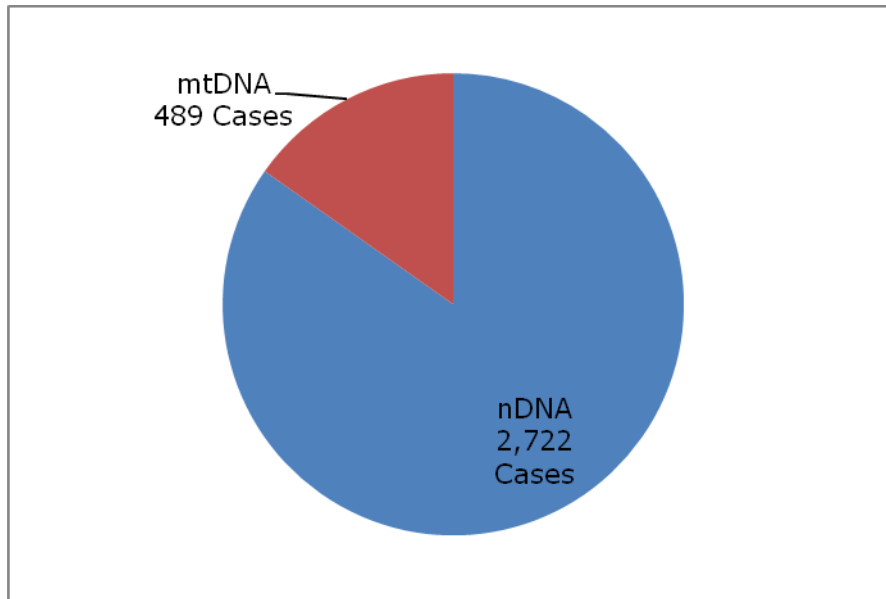


Source: The FBI Laboratory, Nuclear (nDNA) and Mitochondrial DNA (mtDNA) Units' case management systems

During our review, we found it difficult to generate summary statistics across units because the FBI Laboratory does not have a functional laboratory information management system and no FBI Laboratory-wide definition of "backlog." For example, personnel in the Mitochondrial DNA Unit classified a backlogged case to be any case that was not currently being analyzed. In contrast, personnel in the Nuclear DNA Unit determined a case to be backlogged if the Unit had possession of evidence, but a final report containing the examination results was not issued to the contributor. Because the Nuclear DNA Unit contains the majority of the forensic DNA backlog at the FBI Laboratory, we adopted the Nuclear DNA Unit's definition of backlog and applied it to the Mitochondrial DNA Unit. Based on this definition, the DNA case backlog at the FBI Laboratory as of March 2010 is illustrated in Exhibit 5.

<sup>12</sup> The Mitochondrial DNA Unit had three cases classified as both Indian Country and Missing Persons, and we included the three cases in Indian Country. Additionally, there was one case classified as Missing Persons and Intelligence, and we included this case in Missing Persons. As noted in footnote 9, due to the limited number of submissions, the Mitochondrial DNA Unit does not capture or report statistics separately for the District of Columbia Metropolitan Police Department. The statistics are included as a part of the Criminal case statistics within the Unit.

**EXHIBIT 5: FORENSIC DNA CASE BACKLOG AT THE FBI LABORATORY AS OF MARCH 2010**



Source: The FBI Laboratory, Nuclear (nDNA) and Mitochondrial DNA (mtDNA) Units' case management systems

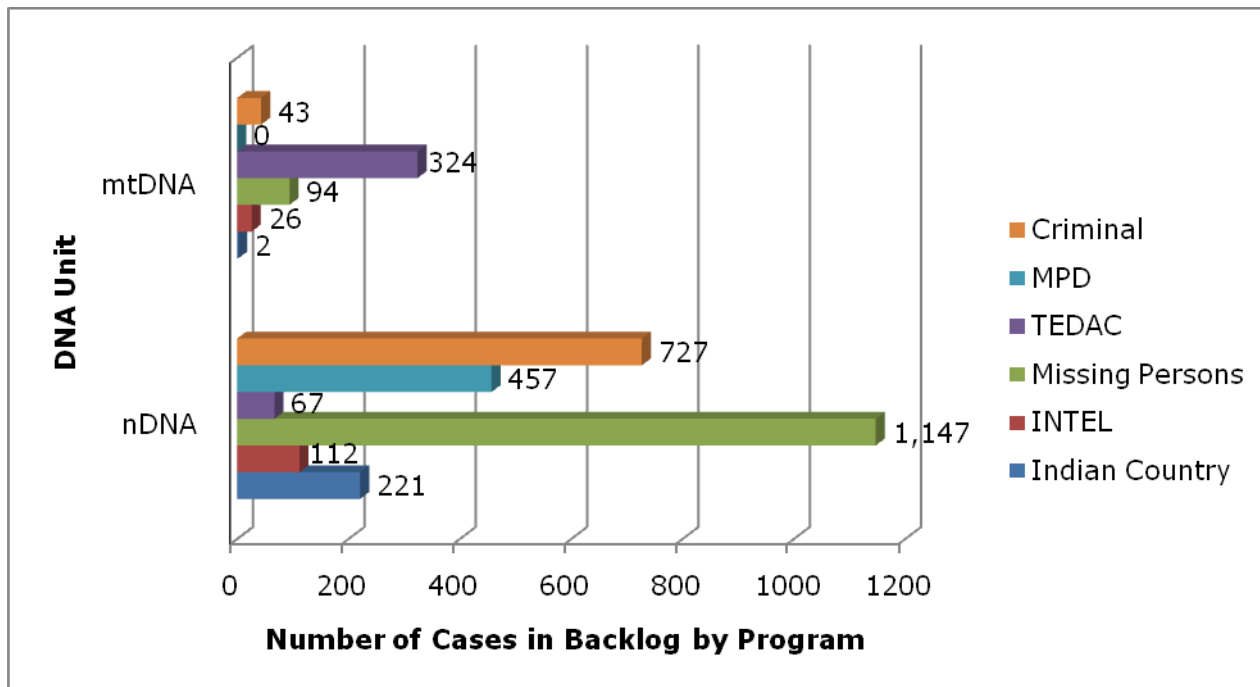
External influences usually determine the order in which DNA cases are analyzed by the FBI Laboratory. For example, upcoming trial dates are the primary influence on case completion. Other considerations include FBI initiatives, the FBI Director's priorities, and media attention on a case.<sup>13</sup> However, because the Nuclear DNA Unit has 10 to 15 cases with approaching trial dates at all times, it is difficult for the Unit to work on cases that are not driven by trial dates.

As illustrated in Exhibit 6, the backlog in each unit varies by program type.

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<sup>13</sup> The FBI Director's priorities include counter-terrorism, intelligence, cyber-based/high technology crimes, public corruption, civil rights, major white-collar crimes, and significant violent crime.

**EXHIBIT 6: FORENSIC DNA CASE BACKLOG  
BY PROGRAM TYPE AS OF APRIL 2010<sup>14</sup>**



Source: The FBI Laboratory, Nuclear (nDNA) and Mitochondrial DNA (mtDNA) Units' case management systems

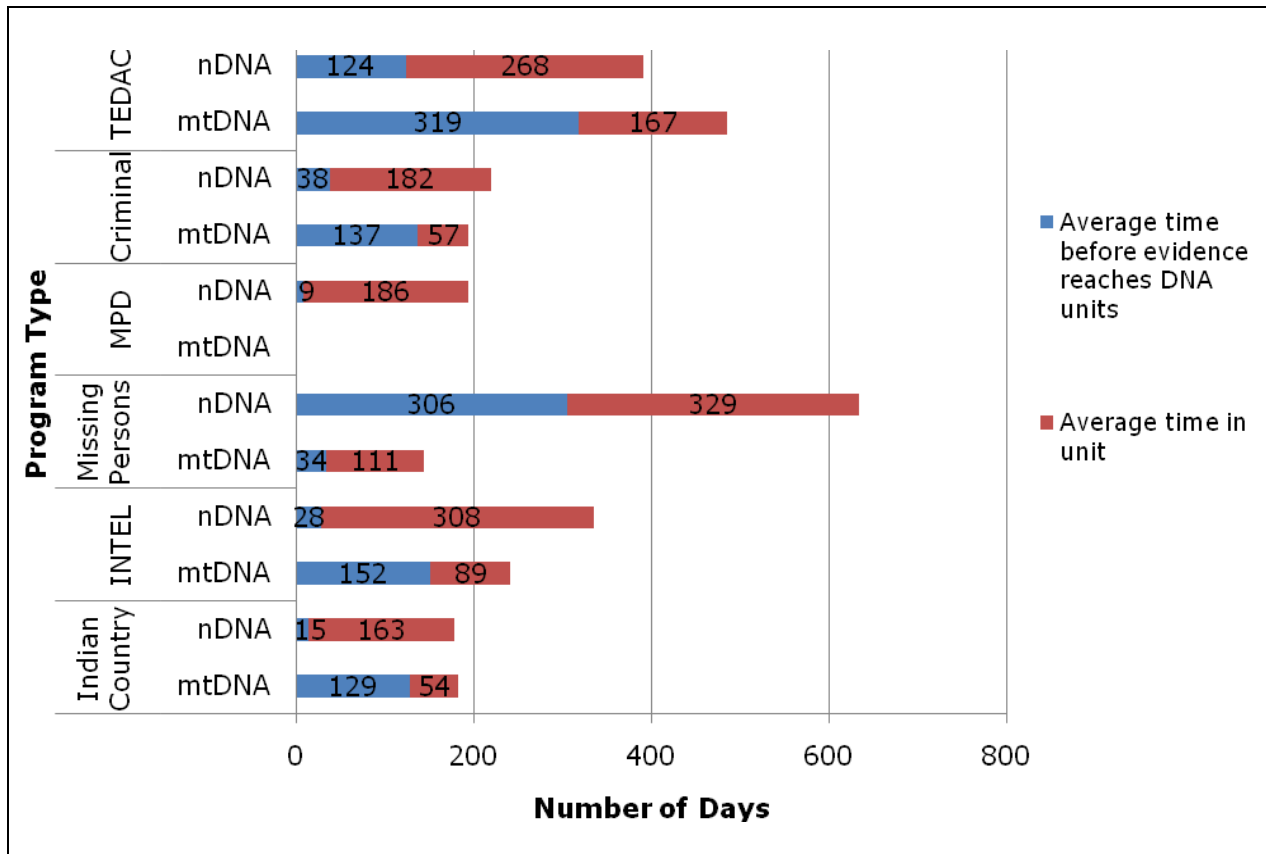
Exhibit 6 shows that the Nuclear DNA Unit's Missing Persons cases are the largest portion of the backlog, with 1,147 cases or 42 percent of its backlog. According to FBI Laboratory personnel, Missing Persons cases often lack a trial date and a suspect, which are driving factors in case prioritization. As a result, these cases are often not a high priority. In the Mitochondrial DNA Unit, TEDAC cases comprise the majority of its backlogged cases, totaling 324 cases or 66 percent of its backlog.

Another troubling aspect of the backlog is the length of time contributors have to wait for results. A strategic initiative of the FBI Laboratory is to reduce the turnaround time for DNA analysis in each unit to 60 days, and also to reduce the FBI Laboratory's forensic casework backlog. We calculated, by program type, the average number of days from when evidence arrived at the FBI Laboratory to its acceptance at the DNA units and the average amount of time it spent in the DNA units. Exhibit 7

<sup>14</sup> The Nuclear DNA Unit provided us with a backlog breakdown by program based on April 2, 2010, backlog information. At that time, the number of cases in the backlog had increased by 9 cases in comparison to the FY 2010 second quarter backlog statistics. The Mitochondrial DNA Unit provided us with a backlog breakdown by program based on April 22, 2010, backlog information. At that time, the number of cases in the backlog remained the same in comparison to the FY 2010 second quarter backlog statistics.

provides the results of those calculations. On average, only two programs in the Mitochondrial DNA Unit met the target 60-day processing time. No programs in the Nuclear DNA Unit met the target. Notably, Missing Persons cases on average take 635 days for contributors to receive results from the Nuclear DNA Unit, and about half of that time was spent in the Evidence Control Unit or other caseworking units.

**EXHIBIT 7: AVERAGE TURNAROUND TIME FOR REPORTED CASES BY PROGRAM TYPE IN THE DNA UNITS FOR FYs 2008 – 2009**



Source: The FBI Laboratory, Nuclear (nDNA) and Mitochondrial DNA (mtDNA) Units' case management systems

Besides the target of 60 days, TEDAC has its own prioritization system, and codes cases as red (high priority), amber (medium priority), or green (low priority). TEDAC sets the due date for DNA analysis based on that priority at 5, 30, or 120 days, respectively. According to the FBI, the Mitochondrial DNA Unit has met the priority red and amber turnaround times in FY 2009. However, we determined that TEDAC cases, on average, take 268 days in the Nuclear DNA Unit and 167 days in the Mitochondrial DNA Unit, not including the time spent in other caseworking units.

According to FBI Laboratory personnel, Indian Country cases are expected to have examination reports issued within 90 days. We found that Indian Country cases on average take 163 days for the Nuclear DNA Unit and 54 days for the Mitochondrial DNA Unit to complete.

As noted above, backlogged cases can have significant impacts. For example, delays at the FBI Laboratory can extend the time it takes to link a perpetrator to a crime, free innocent persons from incarceration, or identify the remains of a missing person. Untimely analysis of TEDAC submissions of improvised explosive devices could also affect the prevention of future terrorist attacks by delaying efforts to identify the maker of the improvised explosive device or the source of its components.

In addition, the timeliness of DNA analysis has an effect on victims' families. For example, in one Missing Persons case, the remains of two children were found and preliminarily identified based on age and clothing recognition. To issue death certificates, DNA analysis confirming the identity of the victims was necessary. However, it took the FBI Laboratory more than 3 months to complete the testing for a positive match. The mother of the deceased children called the contributor daily for notification on the progress of the testing. The contributor could not provide a positive match until the DNA analysis was completed.

As noted above, the prioritization of casework has left Missing Persons cases at the bottom of the FBI Laboratory's forensic DNA case backlog. As a result, Missing Persons cases comprise 42 percent of the Nuclear DNA Unit backlog and 19 percent of the Mitochondrial DNA Unit backlog, including cases dating back to 2001. Although the conventional approach to locating a missing person is to initiate a criminal investigation into the disappearance, in many cases the investigation begins at a different point—when human remains are found. The FBI Laboratory's low prioritization of these cases can have a broader effect because many missing persons are victims of homicide. Therefore, even if a perpetrator is not identified, DNA profiles from crime scenes could be uploaded and potentially linked to each other in CODIS, thereby aiding homicide investigations and potentially

leading to the identification of a suspect. Delays in the analysis process can delay these efforts.

The timeliness of the DNA analysis results also has a financial impact on contributors. In one example, the FBI Laboratory was not able to analyze DNA evidence in time for a trial date scheduled in 60 days. The FBI Laboratory informed the FBI field office that contributed the case that the earliest the DNA test results would be ready was within 90 days. Because of the Speedy Trial Act and necessity of the DNA test results, the contributor had to pay a private laboratory several thousand dollars to analyze the test results in time for the trial.

### **The FBI Laboratory's Efforts to Reduce the Backlog**

Our review found that the FBI Laboratory is making various efforts to attempt to address its forensic DNA backlog, including laboratory information management system implementation, strategic management, human resource initiatives, and outsourcing strategies. We examine these efforts in the following sections.

#### *Laboratory Information Management System*

Within the DNA units there are distinct evidence and process tracking systems. However, the FBI Laboratory does not have a laboratory information management system with the capability to generate statistical reports to help manage laboratory operations, such as the length of time it takes to examine evidence or where delays are occurring. Therefore, the FBI Laboratory cannot electronically determine where the DNA evidence is located during the examination process and what work remains to be completed within the units.

A laboratory information management system can provide many useful functions, including the ability to track evidence throughout the analysis process; Internet capabilities that allow external agencies to review and request information about evidence they have submitted; extensive reporting, workload analysis, and responses to ad-hoc queries; on-line help; and data searching. Because of the absence of an automated system, the FBI Laboratory's Evidence Control Unit uses a paper-based chain-of-custody document that tracks the flow of evidence throughout the FBI Laboratory. The accuracy of a chain-of-custody document is vital when presenting DNA evidence in court and an automated system could result in improved forensic evidence control.



Since September 2003, the FBI has spent over \$10 million in pursuit of a laboratory information management system. Initially, the FBI awarded a contract to JusticeTrax, Inc. to implement a commercial-off-the-shelf system. In March 2006, the FBI terminated the contract with JusticeTrax, Inc. because the contractor could not meet specific FBI security requirements. This resulted in a loss of nearly \$1.2 million in wasted development costs.<sup>15</sup>

Following the failed attempt to implement a commercial-off-the-shelf system, the FBI Laboratory decided to develop its own laboratory information management system. As of March 2010, nearly \$8.9 million has been spent on the successor system being developed by the FBI Laboratory, known as INNOVARI.

In September 2005, before the contract for JusticeTrax, Inc., was fully terminated, the FBI Laboratory transferred to the Office of the Chief Information Officer (OCIO) \$1 million earmarked for the development of INNOVARI. The OCIO used these funds to purchase licenses for an FBI-wide enterprise software to support the INNOVARI project.<sup>16</sup> The OCIO acquired software support services for the FBI Laboratory and agreed to provide the interface, known as an information portal, necessary for FBI Laboratory employees to access INNOVARI.

The OCIO exercised an existing Intergovernmental Agreement to deliver INNOVARI development support services through which the OCIO and the FBI Laboratory collectively spent over \$5 million. The work was ultimately sub-contracted to Sapient to provide these services to the FBI Laboratory.<sup>17</sup>

Testing for the pilot phase of INNOVARI began in September 2006 in the FBI Laboratory's Trace Evidence and Evidence Control Units. An FBI Laboratory employee told us that the initial information portal used during the pilot phase was not acceptable and had numerous security issues that

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<sup>15</sup> U.S. Department of Justice Office of the Inspector General audit report entitled, *The Federal Bureau of Investigation's Implementation of the Laboratory Information Management System*, Audit Report 06-33 (June 2006), i.

<sup>16</sup> The OCIO purchased licenses for a Business Process Management software that can be used in many business environments. According to FBI Laboratory personnel, this software was used by other FBI divisions to simplify workflows and business processes unique to each division within which it was implemented.

<sup>17</sup> Sapient was contracted to provide consulting services to develop the INNOVARI system. The OCIO contracted with Northrop Grumman to develop and maintain the information portal for which INNOVARI was to interface.

could not be resolved. For example, during pilot testing the FBI Laboratory discovered that the OCIO-maintained information portal allowed anyone with access to the system the ability to create a new case file, a duty which could be outside of a user's scope of work. Ultimately, because of these security issues the implementation of INNOVARi has been delayed.

In addition, further delays were caused by coordination issues within the FBI. According to FBI correspondence, the lack of coordination at FBI Headquarters resulted in 39 weeks of project delays. As a result, four of the six Sapient team members supporting the INNOVARi effort, including Sapient's Project Lead and Chief Architect, were assigned to other federal government projects. These coordination issues postponed development, testing, and integration of INNOVARi.

FBI Laboratory personnel told us that they believed that Sapient has, to date, fully met the obligations detailed in its contract with the FBI Laboratory and that INNOVARi was scheduled to be implemented in the Evidence Control Unit by June 2010. According to FBI Laboratory personnel, INNOVARi will allow the Evidence Control Unit to barcode all evidence received by contributors and maintain its chain-of-custody document electronically.

However, the FBI has not met this projected schedule because the new information portal, currently managed by the Information Technology Services Division, only recently received a 180-day security accreditation, and FBI Laboratory personnel will not allow the information portal to host INNOVARi until the portal receives a permanent authority to operate.

In addition, FBI Laboratory DNA forensic specialists expressed concern that because INNOVARi is not a commercial-off-the-shelf laboratory information management system, it will never be fully capable of capturing the workflows of distinct forensic units. Until the new information portal is implemented, the FBI Laboratory cannot ensure the functionality of INNOVARi to the FBI Laboratory users. A key member of the INNOVARi project implementation team informed the OIG that if the FBI Laboratory was to abandon INNOVARi in lieu of a commercial-off-the-shelf system, the new system would face the same information portal difficulties that have prevented the timely implementation of INNOVARi.

Through our discussions with personnel at the FBI Laboratory and the Information Technology Operations Division, and our review of pertinent correspondence and agreements, we concluded that the laboratory information management system implementation project does not appear to have been managed effectively. As of March 2010, the FBI has spent nearly

\$8.9 million and almost 5 years in its attempts to implement INNOVARI. Although we have seen some improvement in the project's status, INNOVARI has experienced numerous problems, including stop-work delays, information portal deficiencies, failures during pilot testing, disagreements between the FBI Laboratory and the OCIO, and claims that a contractor supporting a portion of the information portal project was not providing an adequate level of customer support. We believe the project has reached a critical phase, and we are concerned that the project could fail or be terminated, only to start over again.

### *The FBI Laboratory's Strategy Management System*

The FBI has implemented a bureau-wide Strategy Management System to guide strategy development and decision-making processes regarding its national security and criminal missions. An effective Strategy Management System provides a set of measures to monitor strategic performance, creates a vehicle to assign accountability for specific performance objectives and measures, and enables more objective and strategic resource allocation decisions.

Within the past year, the FBI Laboratory has implemented its strategic plan for achieving goals and allocating resources in line with the FBI's Strategy Management System. As part of its strategic plan, the FBI Laboratory is seeking to reduce backlogs and turnaround times for all submitted cases by compiling best practices from other government entities, gathering statistics on examiners' time spent away from casework duties, reviewing case acceptance policies, and exploring options for the development of a laboratory information management system. We plan to monitor how this assists the FBI Laboratory in reducing backlogs and turnaround times.

Although the FBI Laboratory reports to the Science and Technology Branch, the FBI Laboratory developed its strategy before the Science and Technology Branch's Strategy was created. Because the FBI Laboratory's strategy was created first, the FBI Laboratory is now trying to align its goals with the goals of the Science and Technology Branch. For example, in April 2010, the FBI Laboratory began reporting Strategy Management System progress on a quarterly basis to the Science and Technology Branch. However, the FBI Laboratory's ability to produce and report relevant data is limited because it does not have a laboratory information management system and cannot generate statistics throughout the FBI Laboratory. Instead, the FBI Laboratory has to compile piecemeal statistics based on records maintained in each caseworking unit.

We also noted that the FBI Laboratory's reporting requirements to the Science and Technology Branch had to be tailored to reflect the information that the FBI Laboratory was able to generate. For example, the FBI Laboratory could not provide statistics on average casework processing time that the Science and Technology Branch requested. Instead, the FBI Laboratory provided the "Number of Forensic Transactions Completed." This creates an information gap, which may hinder the FBI in making informed decisions regarding resource allocation and future strategic planning.

Additionally, we observed that there is no standard reporting criteria for the FBI Laboratory's Strategic Management System quarterly reports, and definitions of its performance metrics have not been explicitly shared among the units gathering statistics. Without this shared understanding of reporting requirements, we are concerned that the FBI Laboratory's workload reports to the Science and Technology Branch will be inconsistent.

#### *The FBI Laboratory's Human Resource Management*

According to the FBI, additional staff with the expertise to perform DNA analysis would assist in reducing the backlog.<sup>18</sup> The FBI reports that the Nuclear DNA Unit has 21 funded examiner positions, and is in the process of bringing on board additional forensic examiners. Of the 21 examiner positions, 9 are on-board qualified examiners, 8 are examiners-in-training, and 4 are examiner candidates undergoing background investigations. New hires are required to undergo a background investigation in addition to completing a 12 - 18 month training program before they can conduct casework. This puts a strain on existing forensic examiner resources because current on-board examiners conduct the training, taking time away from casework.

According to the FBI, less than 50 percent of a Nuclear DNA examiner's time is spent on analyzing DNA evidence. We found that the balance of their time is spent performing supervisory and managerial tasks, making phone calls to contributors to obtain case specific information and to provide status updates; testifying in court; and providing DNA training to other federal components.

However, because examiners did not record their time before July 2009, and their current, informal method for tracking time does not quantify the amount of time spent on casework, we cannot independently determine the amount of time that examiners spend on casework or their other duties.

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<sup>18</sup> The FBI stated that since 2004 it has requested almost \$120 million for DNA analysis and almost \$260 million for TEDAC, but only half of the DNA and 2 percent of the TEDAC resources have been included within prior administration budgets.

Without formal time tracking procedures, FBI Laboratory managers do not know how examiners are spending their time and where there could be areas for efficiency improvements. After our inquiries on this issue, the FBI Laboratory agreed with the need to implement formalized procedures to track time to better gauge what percentage of time is spent on actual casework.

### *The FBI's Outsourcing Efforts*

To help reduce the forensic DNA case backlog, the FBI has implemented several outsourcing agreements with both public and private laboratories. The FBI has current and planned outsourcing agreements with the District of Columbia Metropolitan Police Department, and for the Missing Persons, Indian Country, and TEDAC programs.

In 2004, the FBI Laboratory signed an agreement with the District of Columbia Metropolitan Police Department to provide laboratory facilities and services and to help the District of Columbia Metropolitan Police Department establish its own forensic DNA analysis capabilities. However, because of space constraints at the FBI Laboratory, the District of Columbia Metropolitan Police Department (Metropolitan Police Department) and the FBI Laboratory agreed in September 2008 to outsource police cases to a private laboratory for testing. Based on this agreement, the Metropolitan Police Department will reimburse the FBI up to \$4 million for the FBI Laboratory to assist it with forensic examiner training and forensic testing of material connected with criminal cases.

To obtain DNA analysis, the District of Columbia Metropolitan Police Department sends a request to the FBI Laboratory Nuclear DNA Unit to create a new case. The Nuclear DNA Unit considers these cases as a part of the Nuclear DNA backlog, although the Police Department physically maintains the forensic evidence at its facility. According to FBI Laboratory personnel, the Metropolitan Police Department cannot locate evidence for over 200 cases, which comprises almost half of the backlogged Police Department cases. As a result, the Nuclear DNA Unit has instructed the Metropolitan Police Department to ensure that future evidence has been located and prepared prior to submission of an exam request.

In addition to the agreement with the Metropolitan Police Department, the FBI Laboratory also has cooperative agreements with three regional forensic laboratories to provide mitochondrial DNA analysis to other federal, state, and local law enforcement agencies.<sup>19</sup> As part of these outsourcing agreements, the FBI reimburses each of the partner laboratories for expenses related to mitochondrial DNA analysis, including salaries. Each laboratory is projected to complete 120 mitochondrial DNA cases a year. These cases are sent directly to the partner laboratories from law enforcement contributors and are tracked by the FBI Laboratory.<sup>20</sup> According to FBI Laboratory personnel, the FBI Laboratory has decided to pursue a similar outsourcing agreement for testing of nuclear DNA Missing Persons case evidence.

According to the FBI, the regional mitochondrial DNA outsourcing program contributed to a decrease in the FBI Laboratory's mitochondrial DNA backlog from 678 cases at the end of FY 2006 to 255 cases at the end of FY 2008. This outsourcing program has relieved the Mitochondrial DNA Unit from processing new cases that were sent to these regional laboratories. However, we found that from FY 2009 through March 2010, the backlog has increased to 489 cases. FBI Laboratory personnel informed us that because of the unexpected volume of TEDAC submissions, the Mitochondrial DNA Unit at the FBI Laboratory workload has increased significantly.

In addition to the outsourcing efforts described above, the FBI has discussed outsourcing plans for Indian Country and TEDAC cases. Because of the long turnaround times for Indian Country cases, which as discussed above average 163 days in the Nuclear DNA Unit and 54 days for the Mitochondrial DNA Unit, contributors have sought to develop an agreement that will allow them to directly submit Indian Country case evidence to partner public laboratories and the FBI would reimburse these laboratories for the cost of DNA analysis.

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<sup>19</sup> The FBI Laboratory had regional forensic laboratory agreements with the Arizona Department of Public Safety, the Minnesota Department of Public Safety, the Connecticut Department of Public Safety, and the New Jersey Department of Public Safety. At the end of FY 2009, the FBI Laboratory and the Connecticut Department of Public Safety ended their agreement.

<sup>20</sup> Our analysis of the FBI Laboratory's Mitochondrial DNA Unit's backlog did not include backlog statistics from the partner laboratories because these cases are sent directly to the partner laboratories.

As of April 2010, TEDAC is seeking to either outsource high priority cases from the FBI Laboratory or create a permanent, TEDAC-specific laboratory. An FBI Laboratory official told us that TEDAC operations take up considerable storage space at the FBI Laboratory. The official expressed concern that if another catastrophe, similar to the events of September 11, 2001, were to occur, the FBI Laboratory would not have adequate space to safely store and manage evidence from such an event.

## **Conclusion**

The FBI Laboratory's forensic DNA analysis units have a significant backlog, with over 3,200 backlogged cases awaiting DNA analysis as of March 2010, and this backlog is growing. Since October 2008 the backlog of forensic DNA cases has increased in the Nuclear DNA Unit by almost 40 percent and in the Mitochondrial DNA Unit by almost 130 percent. At the current rate of work, the forensic DNA case backlog would require about 2 years to complete, even without the addition of any new cases.

Missing Persons cases composed the highest number of backlogged cases, with 1,241 cases or 39 percent of the forensic DNA case backlog as of April 2010. Additionally, the backlog contained 770 Criminal cases, 457 District of Columbia Metropolitan Police Department cases, 391 TEDAC cases, 223 Indian Country cases, and 138 Intelligence cases.

The average time that it takes the FBI Laboratory to provide DNA testing results to contributors is lengthy, ranging from approximately 150 days to over 600 days. On average, two programs in the Mitochondrial DNA Unit provided DNA test results within 60 days to contributors, while none of the Nuclear DNA Unit programs provided test results in this timeframe. Missing Persons cases on average take 635 days for contributors to receive results from the Nuclear DNA Unit. This backlog can have significant consequences for the FBI's law enforcement and counterterrorism efforts. For example, the forensic DNA case backlog can extend the time it takes to link a perpetrator to a crime, free innocent persons from incarceration, or identify the remains of a missing person. Untimely analysis of TEDAC submissions of improvised explosive devices could also affect the prevention of future terrorist attacks by delaying efforts to identify the maker of the improvised explosive device or the source of its components.

According to the FBI, additional staffing with the expertise to perform DNA analysis would assist in reducing the backlog, and the FBI Laboratory is pursuing various strategies to help reduce the forensic DNA case backlog. However, the FBI Laboratory still has not been able to implement an automated laboratory information management system. Since September

2005, the FBI Laboratory has spent nearly \$8.9 million developing INNOVARi as such a system, and according to FBI Laboratory personnel, the implementation of INNOVARi has experienced significant delays as the result of information portal deficiencies. We are also concerned that INNOVARi may experience unforeseen operational problems once the current information portal receives permanent authority to operate or that the project may be terminated, only to start over again.

While the FBI Laboratory has implemented several outsourcing agreements with both public and private laboratories, we also have concerns whether these efforts will significantly contribute to a decrease in the FBI Laboratory's forensic DNA case backlog.

## **Recommendations**

The FBI Laboratory is undertaking several strategies to support case contributors and reduce its DNA backlog in forensic casework. However, because of the significance of the issues we found, we are making five recommendations to help improve FBI Laboratory operations:

1. Standardize FBI Laboratory-wide definitions for calculating backlog within caseworking units.
2. Ensure the availability of an information portal that has received permanent authority to operate for FBI Laboratory users to access a laboratory information management system.
3. Establish formal time tracking procedures and definitions in the FBI Laboratory to accurately capture time spent conducting forensic DNA casework.
4. Coordinate with the District of Columbia Metropolitan Police Department to resolve the more than 200 instances of missing case evidence.
5. Examine the effect of outsourcing agreements on the overall DNA forensic casework backlog and the time contributors wait for test results.



FBI RESPONSE TO OIG TECHNICAL ASSISTANCE REPORT  
RECOMMENDATIONS



U.S. Department of Justice

Federal Bureau of Investigation

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Washington, D. C. 20535-0001

July 28, 2010

Cynthia A. Schnedar  
Deputy Inspector General  
Office of the Inspector General  
U.S Department of Justice  
950 Pennsylvania Avenue, N.W.  
Washington, D.C. 20530

Dear Ms. Schnedar:

The Federal Bureau of Investigation (FBI) appreciates the opportunity to review and respond to your draft audit interim technical assistance report entitled, "Review of the Federal Bureau of Investigation Laboratory's Forensic DNA Case Backlog" (hereinafter "Report").

We are pleased the Report acknowledges the FBI's work on the convicted offender backlog. The FBI has in eight months nearly cut in half the convicted offender backlog from its December 2009 peak of 312,000 samples to a current backlog of approximately 165,000 samples. We are on track to eliminate that remaining backlog entirely by September of this year. As we reported to you, the FBI shifted vital Laboratory resources from casework to address the massive growth of convicted offender samples following legislative changes in 2001, 2004, and 2005. This shift of resources, combined with other Laboratory initiatives, enabled the FBI to address the backlog created by skyrocketing demand.

The shift in resources to the convicted offender backlog took resources away from DNA forensic casework. That loss of resources coincided with new demands on DNA forensic caseworkers. The Laboratory has taken on significant new DNA casework in the last several years. First, as described in your Report, the FBI works with the Terrorist Explosive Device Analytical Center (TEDAC) to provide forensic and technical exploitation of Improvised Explosive Devices (IEDs) collected from war zones as a means to gather intelligence. TEDAC was established in 2003, and annual TEDAC submissions to the Laboratory's DNA units doubled between 2005 and 2009. Second, in 2000, the FBI established a Missing Persons program. Standing alone, the Missing Persons program now accounts for approximately 1,241 cases in the Laboratory's DNA casework backlog.

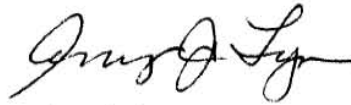
Significant portions of the FBI's requests for additional DNA resources were rejected during that same period of time. As noted in your Report, since 2004, the FBI has requested almost \$120 million for DNA analysis and almost \$260 million for TEDAC, but only half of the DNA and two percent of the TEDAC resources have been included within prior administration budgets. In addition, during the same period of time, the FBI made recurring requests for additional DNA personnel. Cumulatively, the FBI requested 149 more DNA positions than it received. The FBI believes that our backlog numbers could be significantly lower had resources kept pace with the escalating submissions. Nevertheless, as you know, we have pursued other strategies to address the growing number of case submissions and we are

making progress on the backlog: over the last five months, the backlog of nuclear DNA cases has dropped.

The FBI looks forward to the continuation of this audit and its fuller accounting of the resource issues that affected our ability to address the growing number of case submissions. The auditing team has not yet conducted interviews at TEDAC or of the FBI Lab's Assistant Director, which the FBI views as imperative to obtain a full understanding of these issues.

In conclusion, based upon a review of the Report, the FBI concurs with the five interim recommendations directed to the FBI. The FBI appreciates the professionalism exhibited by your staff to complete this interim Report. Enclosed herein are the FBI's responses to the recommendations. Please feel free to contact me at 202-324-2901 should you have any questions or need further information.

Sincerely yours,

A handwritten signature in black ink, appearing to read "Amy Jo Lyons". The signature is fluid and cursive, with a long horizontal stroke extending to the right.

Amy Jo Lyons  
Assistant Director  
Inspection Division

Enclosure

**OIG Audit of FBI's Forensic DNA Sampling Backlog  
Responses to Recommendations**

***1. Standardize FBI Laboratory-wide definitions for calculating backlog within caseworking units.***

Concur. The FBI Laboratory Division (Lab) will standardize FBI Laboratory-wide definitions for calculating backlog within caseworking units. Currently, the Lab includes in a backlog count all cases pending completion at the Lab. The Lab will consider alternate definitions of backlog to allow for program-specific analysis time considerations and customer requirements.

***2. Ensure the availability of an information portal for FBI Laboratory users to access a laboratory information management system.***

Concur. Effective 6/3/2010, the FBI's Security Division (SecD) granted an Authority to Operate for VIDAR for a period of 180 days. VIDAR hosts three tools: 1) the Information Portal; 2) INNOVARi; and 3) Collaboration. To ensure the availability of the Information Portal, SecD has also established a Plan of Action and Milestone (POA&M) list to mitigate the existing Operational and Technical Control vulnerabilities. Each month, SecD updates the POA&M "work-off" dates to indicate a Target Date for completion. (See Secret document attached to these responses.)

In addition, the FBI Lab has funded the acquisition of hardware and software that has been installed by the Operational Technology Division (OTD) in Quantico during 2010 at their facility. This has permitted the Lab to currently have an instance of the INNOVARi application operating on the Quantico-based environment to support user acceptance testing and training. The Quantico-based environment is undergoing its own certification and accreditation process, which is being overseen by OTD, and would have the capability of accommodating a production environment in the future if required by the Lab. If a Quantico-based environment is used in the future as the production environment for the Lab's information management system, then the use of an enterprise Information Portal would not be required to access the system.

Lastly, the FBI Assistant Director responsible for the Lab has recently initiated a comprehensive review to determine laboratory information needs. Depending on the outcome of this review, the Information Portal needs of the Lab could change.

***3. Establish formal time tracking procedures and definitions in the FBI Laboratory to accurately capture time spent conducting forensic DNA casework.***

Concur. The Nuclear DNA Unit (nDNAU) has purchased Easy Projects.Net. This Commercial-off-the-Shelf product is a project management, task, and time tracking software tool. The nDNAU will host EasyProjects.Net on its DNA Local Area Network to manage its resource allocation and to centralize its program management. Easy Projects.Net will enable the nDNAU to track the time Forensic Examiners spend

performing forensic case work and other tasks. The unit's managers will use Easy Project.Net's project management feature to assign and define tasks as well as track the progress of individual projects.

In the near future, the Mitochondrial DNA Unit will implement the same project management, task, and time tracking software tool.

***4. Coordinate with the District of Columbia Metropolitan Police Department to resolve the more than 200 instances of missing evidence.***

Concur. In early 2010, a Lab review of the District of Columbia Metropolitan Police Department (MPD) cases identified case requests that had been forwarded to the FBI Laboratory, but that had not yet been entered into the unit's Case Management system. MPD had earlier estimated that there were "more than 200," but the FBI's review with them identified 160. These requests were originally submitted to register them for serological and nuclear DNA analysis under the terms of the Memorandum of Agreement (MOA) between MPD and the FBI; however, because MPD had not yet submitted evidence, they remained inactive. The nDNAU has worked with MPD to review these 160 cases and MPD has confirmed that it is not able to forward evidence for testing at this time. These cases have been closed by the nDNAU and removed from its active casework inventory. The closure of these cases does not preclude MPD from submitting evidence in these matters through subsequent examination requests for potential future analysis under the terms of the MOA. The FBI requests that this recommendation be closed.

***5. Examine the effect of outsourcing agreements on the overall DNA forensic casework backlog and the time contributors wait for test results.***

Concur. The effects on the DNA casework backlog will be monitored for the following outsourcing agreements.

- Cooperative Agreement with Minnesota Department of Public Safety, Bureau of Criminal Apprehension
- Memorandum of Agreement with the Washington, DC's Metropolitan Police Department
- Cooperative Agreement with three Regional Mitochondrial DNA Laboratories

## APPENDIX II

### OFFICE OF THE INSPECTOR GENERAL SUMMARY AND ANALYSIS OF ACTIONS NECESSARY TO CLOSE THE REPORT

The OIG provided a draft of this technical assistance report to the FBI. The FBI response is incorporated in Appendix I. The following provides the OIG analysis of the response and summary of actions necessary to close the report.

The FBI stated in its response that over the last 5 months, the backlog of nuclear DNA cases has decreased. During our review which ended in April 2010, we report there has been a steady increase in the Nuclear DNA Unit's case backlog since October 2008. Backlog numbers can fluctuate from month to month. We believe that our long-term trend calculations of the Nuclear DNA Unit's backlog present a more accurate picture of the backlog than short-term calculations.

#### Summary of Actions Necessary to Close the Report

- 1. Resolved.** The FBI concurred with our recommendation to standardize FBI Laboratory-wide definitions for calculating backlog within caseworking units. This recommendation can be closed when we receive evidence that the FBI Laboratory has established a uniform definition of backlog in caseworking units to be used when calculating and reporting performance statistics. Additionally, please provide clarification as to why alternate definitions of backlog are necessary to allow for program-specific analysis time considerations and customer requirements.
- 2. Resolved.** The FBI concurred with our recommendation to ensure the availability of an information portal that has received permanent authority to operate for FBI Laboratory users to access a laboratory information management system. This recommendation can be closed when we receive evidence that full security accreditation and a permanent authority to operate has been granted to an information portal through which the FBI Laboratory can deliver INNOVARi to its users. If the review initiated by the Assistant Director produces a decision that would lead the FBI Laboratory to abandon the INNOVARi project, please provide us with evidence of this review and a plan detailing alternative options to provide the FBI Laboratory with a laboratory information management system in a timely manner.

3. **Resolved.** The FBI concurred with our recommendation to establish formal time tracking procedures and definitions in the FBI Laboratory to accurately capture time spent conducting forensic DNA casework. This recommendation can be closed when we receive evidence that the Nuclear and Mitochondrial DNA Units are using this project management, task, and time-tracking software tool to capture unit hours spent on casework and other duties.
4. **Resolved.** The FBI concurred with our recommendation to coordinate with the District of Columbia Metropolitan Police Department to resolve the over 200 instances of missing case evidence. This recommendation can be closed when we receive evidence of the FBI Laboratory's review of the Metropolitan Police Department's case requests and the documentation and justification for the removal of the 160 cases from the Nuclear DNA Unit's active case inventory.
5. **Resolved.** The FBI concurred with our recommendation to examine the effect of outsourcing agreements on the overall DNA forensic casework backlog and the time contributors wait for test results. This recommendation can be closed when we receive documentation outlining the FBI Laboratory's specific monitoring plans for all outsourcing agreements including what data they will be monitoring and how often, as well as how the data will be used to gauge performance.