



**AUDIT OF COMPLIANCE WITH STANDARDS
GOVERNING
COMBINED DNA INDEX SYSTEM ACTIVITIES AT THE
NORTH DAKOTA OFFICE OF ATTORNEY GENERAL
CRIME LABORATORY
BISMARCK, NORTH DAKOTA**

U.S. Department of Justice
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Audit Division

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EXECUTIVE SUMMARY

The Department of Justice Office of the Inspector General (OIG), Audit Division, has completed an audit of compliance with standards governing Combined DNA Index System (CODIS) activities at the North Dakota Office of Attorney General Crime Laboratory (Laboratory) in Bismarck, North Dakota.

Background

The Federal Bureau of Investigation's (FBI) CODIS program combines forensic science and computer technology to provide an investigative tool to federal, state, and local crime laboratories in the United States, as well as those from select international law enforcement agencies. The CODIS program allows these crime laboratories to compare and match DNA profiles electronically to assist law enforcement in solving crimes and identifying missing or unidentified persons.¹ The FBI's CODIS Unit manages CODIS, as well as develops, supports, and provides the program to crime laboratories to foster the exchange and comparison of forensic DNA evidence.

The FBI implemented CODIS as a distributed database with hierarchical levels that enables federal, state, and local crime laboratories to compare DNA profiles electronically. The hierarchy consists of three distinct levels that flow upward from the local level to the state level and then, if allowable, the national level. The National DNA Index System (NDIS), the highest level in the hierarchy, contains DNA profiles uploaded by law enforcement agencies across the United States and is managed by the FBI. NDIS enables the laboratories participating in the CODIS program to electronically compare DNA profiles on a national level. The State DNA Index System (SDIS) is used at the state level to serve as a state's DNA

¹ DNA, or deoxyribonucleic acid, is genetic material found in almost all living cells that contains encoded information necessary for building and maintaining life. Approximately 99.9 percent of human DNA is the same for all people. The differences found in the remaining 0.1 percent allow scientists to develop a unique set of DNA identification characteristics (a DNA profile) for an individual by analyzing a specimen containing DNA.

database and contains DNA profiles from local laboratories and state offenders. The Local DNA Index System (LDIS) is used by local laboratories.

OIG Audit Objectives

Our audit generally covered the period from October 2010 through November 2012. The objectives of our audit were to determine if: (1) the North Dakota Office of Attorney General Crime Laboratory was in compliance with select NDIS Operational Procedures; (2) the Laboratory was in compliance with certain Quality Assurance Standards (QAS) issued by the FBI; and (3) the Laboratory's forensic DNA profiles in CODIS databases were complete, accurate, and allowable for inclusion in NDIS.

Our review determined the following:

- The Laboratory was in compliance with the NDIS operational procedures tested. The Laboratory had sufficient measures to physically and electronically safeguard CODIS; for each CODIS user, all appropriate documents were provided to the FBI, and for the sample of NDIS Match's we reviewed, the match confirmation process was timely. However, the Laboratory's written policy on the casework confirmation process was not detailed. The policy was updated during field work and we take no further exception to the policy.
- The Laboratory was in compliance with the QAS we reviewed, including: (1) completion of periodic external QAS reviews; (2) proper controls to prevent Laboratory access by unauthorized personnel; and (3) adequate procedures to ensure the integrity of evidence and convicted offender samples. We also found the laboratory does not currently outsource the analysis of its forensic DNA samples to another laboratory.
- We reviewed 100 of the Laboratory's 549 forensic profiles that have been uploaded to NDIS as of October 11, 2012. Of the 100 forensic profiles sampled, we found that 99 profiles were complete, accurate, and allowable for inclusion in NDIS. One profile was complete and accurate but unallowable for inclusion in NDIS, as the sample was taken from a shoe, which was removed directly from the suspect. The Laboratory deleted the profile prior to our arrival; as a result we take no further exception to the unallowable profile.

The results of our audit are discussed in detail in the Findings section of the report; we make no recommendations to the FBI. Our audit

objectives, scope, and methodology are detailed in Appendix I of the report and the audit criteria are detailed in Appendix II.

We discussed the results of our audit with Laboratory officials and have included their comments in the report as applicable.

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INTRODUCTION

The Department of Justice Office of the Inspector General (OIG), Audit Division, has completed an audit of compliance with standards governing Combined DNA Index System (CODIS) activities at the North Dakota Office of Attorney General Crime Laboratory (Laboratory).

Background

The Federal Bureau of Investigation's (FBI) CODIS provides an investigative tool to federal, state, and local crime laboratories in the United States using forensic science and computer technology. The CODIS program allows these laboratories to compare and match DNA profiles electronically, thereby assisting law enforcement in solving crimes and identifying missing or unidentified persons.¹ The FBI's CODIS Unit manages CODIS and is responsible for its use in fostering the exchange and comparison of forensic DNA evidence.

OIG Audit Objectives

Our audit generally covered the period from October 2010 to November 2012. The objectives of our audit were to determine if: (1) the North Dakota Office of Attorney General Crime Laboratory was in compliance with select National DNA Index System (NDIS) Operational Procedures; (2) the Laboratory was in compliance with certain Quality Assurance Standards (QAS) issued by the FBI; and (3) the Laboratory's forensic DNA profiles in CODIS databases were complete, accurate, and allowable for inclusion in NDIS. Appendix I contains a detailed description of our audit objectives, scope, and methodology; and Appendix II contains the criteria used to conduct the audit.

¹ DNA, or deoxyribonucleic acid, is genetic material found in almost all living cells that contains encoded information necessary for building and maintaining life. Approximately 99.9 percent of human DNA is the same for all people. The differences found in the remaining 0.1 percent allow scientists to develop a unique set of DNA identification characteristics (a DNA profile) for an individual by analyzing a specimen containing DNA.

Legal Foundation for CODIS

The FBI's CODIS program began as a pilot project in 1990. The DNA Identification Act of 1994 (Act) authorized the FBI to establish a national index of DNA profiles for law enforcement purposes. The Act, along with subsequent amendments, has been codified in a federal statute (Statute) providing the legal authority to establish and maintain NDIS.²

Allowable DNA Profiles

The Statute authorizes NDIS to contain the DNA identification records of persons convicted of crimes, persons who have been charged in an indictment or information with a crime, and other persons whose DNA samples are collected under applicable legal authorities. Samples voluntarily submitted solely for elimination purposes are not authorized for inclusion in NDIS. The Statute also authorizes NDIS to include analysis of DNA samples recovered from crime scenes or from unidentified human remains, as well as those voluntarily contributed from relatives of missing persons.

Allowable Disclosure of DNA Profiles

The Statute requires that NDIS only include DNA information that is based on analyses performed by or on behalf of a criminal justice agency – or the U.S. Department of Defense – in accordance with QAS issued by the FBI. The DNA information in the index is authorized to be disclosed only: (1) to criminal justice agencies for law enforcement identification purposes; (2) in judicial proceedings, if otherwise admissible pursuant to applicable statutes or rules; (3) for criminal defense purposes, to a defendant who shall have access to samples and analyses performed in connection with the case in which the defendant is charged; or (4) if personally identifiable information (PII) is removed for a population statistics database, for identification research and protocol development purposes, or for quality control purposes.

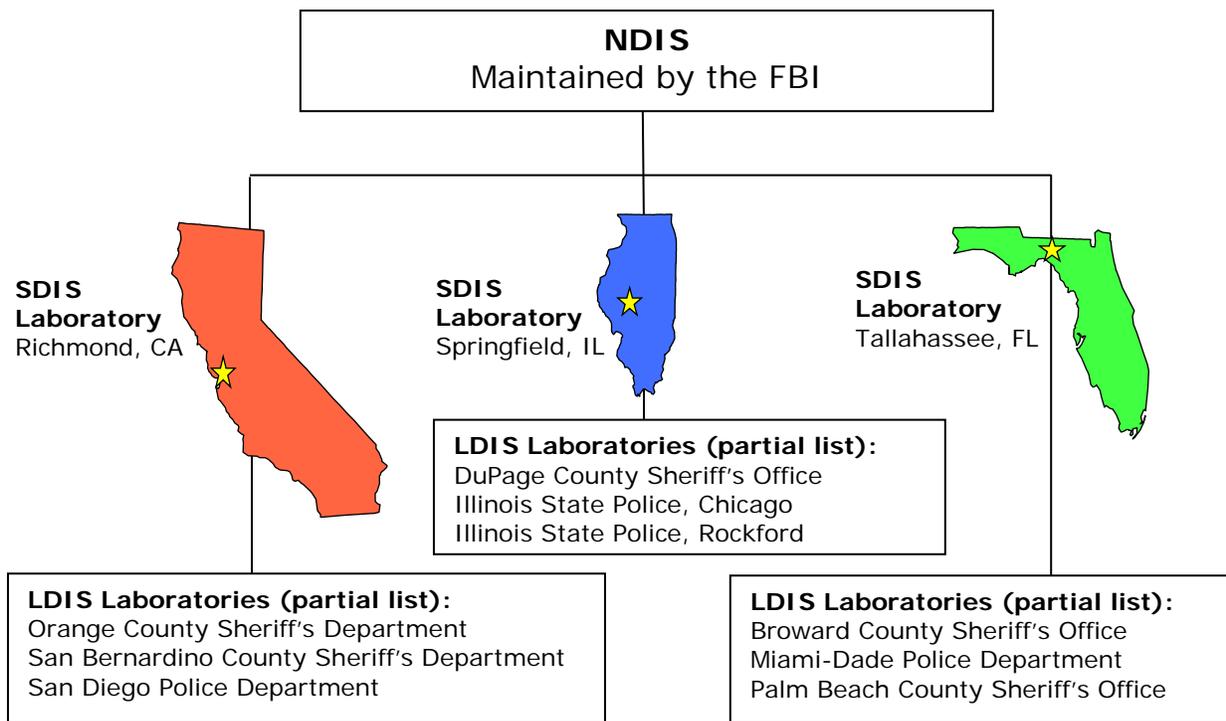
CODIS Structure

The FBI implemented CODIS as a distributed database with hierarchical levels that enables federal, state, and local crime laboratories to compare DNA profiles electronically. CODIS consists of a hierarchy of three distinct levels: (1) NDIS, managed by the FBI as the nation's DNA database

² 42 U.S.C.A. § 14132 (2006).

containing DNA profiles uploaded by participating states; (2) the State DNA Index System (SDIS) which serves as a state's DNA database containing DNA profiles from local laboratories within the state and state offenders; and (3) the Local DNA Index System (LDIS), used by local laboratories. DNA profiles originate at the local level and then flow upward to the state and, if allowable, national level. For example, the local laboratory in the Palm Beach County, Florida, Sheriff's Office sends its profiles to the state laboratory in Tallahassee, which then uploads the profiles to NDIS. Each state participating in CODIS has one designated SDIS laboratory. The SDIS laboratory maintains its own database and is responsible for overseeing NDIS issues for all CODIS-participating laboratories within the state. The graphic below illustrates how the system hierarchy works.

Example of System Hierarchy within CODIS



National DNA Index System

NDIS, the highest level in the CODIS hierarchy, enables laboratories participating in the CODIS program to electronically compare DNA profiles on a national level. NDIS does not contain names or other PII about the profiles. Therefore, matches are resolved through a system of

laboratory-to-laboratory contacts. NDIS contains the following eight searchable indices:

- Convicted Offender Index contains profiles generated from persons convicted of qualifying offenses.³
- Arrestee Index is comprised of profiles developed from persons who have been arrested, indicted, or charged in an information with a crime.
- Legal Index consists of profiles that are produced from DNA samples collected from persons under other applicable legal authorities.⁴
- Detainee Index contains profiles from non-U.S. persons detained under the authority of the United States and required by law to provide a DNA sample for analysis and entry into NDIS.
- Forensic Index profiles originate from, and are associated with, evidence found at crime scenes.
- Missing Person Index contains known DNA profiles of missing persons and deduced missing persons.
- Unidentified Human (Remains) Index holds profiles from unidentified living individuals and the remains of unidentified deceased individuals.⁵
- Relatives of Missing Person Index is comprised of DNA profiles generated from the biological relatives of individuals reported missing.

Given these multiple databases, the main functions of CODIS are to:
(1) generate investigative leads that may help in solving crimes and
(2) identify missing and unidentified persons.

³ The phrase “qualifying offenses” refers to local, state, or federal crimes that require a person to provide a DNA sample in accordance with applicable laws.

⁴ An example of a Legal Index profile is one from a person found not guilty by reason of insanity who is required by the relevant state law to provide a DNA sample.

⁵ An example of an Unidentified Human (Remains) Index profile from a living person is a profile from a child or other individual, who cannot or refuses to identify themselves.

The Forensic Index generates investigative leads in CODIS that may help solve crimes. Investigative leads may be generated through matches between the Forensic Index and other indices in the system, including the Convicted Offender, Arrestee, and Legal Indices. These matches may provide investigators with the identity of suspected perpetrators. CODIS also links crime scenes through matches between Forensic Index profiles, potentially identifying serial offenders.

In addition to generating investigative leads, CODIS furthers the objectives of the FBI's National Missing Person DNA Database program through its ability to identify missing and unidentified individuals. For instance, those persons may be identified through matches between the profiles in the Missing Person Index and the Unidentified Human (Remains) Index. In addition, the profiles within the Missing Person and Unidentified Human (Remains) Indices may be vetted against the Forensic, Convicted Offender, Arrestee, Detainee, and Legal Indices to provide investigators with leads in solving missing and unidentified person cases.

State and Local DNA Index Systems

The FBI provides CODIS software free of charge to any state or local law enforcement laboratory performing DNA analysis. Laboratories are able to use the CODIS software to upload profiles to NDIS. However, before a laboratory is allowed to participate at the national level and upload DNA profiles to NDIS, a Memorandum of Understanding (MOU) must be signed between the FBI and the applicable state's SDIS laboratory. The MOU defines the responsibilities of each party, includes a sublicense for the use of CODIS software, and delineates the standards laboratories must meet in order to utilize NDIS. Although officials from LDIS laboratories do not sign an MOU, LDIS laboratories that upload DNA profiles to an SDIS laboratory are required to adhere to the MOU signed by the SDIS laboratory.

States are authorized to upload DNA profiles to NDIS based on local, state, and federal laws, as well as NDIS regulations. However, states or localities may maintain NDIS-restricted profiles in SDIS or LDIS. For instance, a local law may allow for the collection and maintenance of a victim profile at LDIS but NDIS regulations do not authorize the upload of that profile to the national level.

CODIS becomes more useful as the quantity of DNA profiles in the system increases because the potential for additional leads rises. However, the utility of CODIS relies upon the completeness, accuracy, and quality of profiles that laboratories upload to the system. Incomplete CODIS profiles are those for which the required number of core loci were not tested or do

not contain all of the DNA information that resulted from a DNA analysis and may not be searched at NDIS.⁶ The probability of a false match among DNA profiles is reduced as the completeness of a profile increases. Inaccurate profiles, which contain incorrect DNA information or an incorrect specimen number, may generate false positive leads, false negative comparisons, or lead to the misidentification of a sample. Further, laws and regulations exclude certain types of profiles from being uploaded to CODIS to prevent violations to an individual's privacy and foster the public's confidence in CODIS. Therefore, it is the responsibility of the Laboratory to ensure that it is adhering to the NDIS operational procedures and the profiles uploaded to CODIS are complete, accurate, and allowable for inclusion in NDIS.

Laboratory Information

The Laboratory is the only CODIS laboratory in the state of North Dakota and they serve 150 agencies and a population of 720,000. The Laboratory is American Society of Crime Laboratory Directors Laboratory Accreditation Board (ASCLD/LAB) International certified, which was just renewed in October 2012.

The Laboratory signed the FBI Memorandum of Understanding on January 27, 1999, and began processing criminal case evidence late in 2000; their first upload to NDIS was on December 19, 2000. The Laboratory has not outsourced the analysis of samples within the last 2 years.

The Laboratory started receiving offender samples on October 27, 1999, and began uploading the offender specimens on October 9, 2003. The Laboratory has an arrestee database, which it began on August 1, 2009, and it does not have a Legal Index database.

⁶ A "locus" is a specific location on a chromosome. The plural form of locus is loci.

FINDINGS

I. Compliance with NDIS Operational Procedures

The Laboratory was in compliance with the NDIS participation requirements regarding sufficient measures to physically and electronically safeguard CODIS, all required personnel have successfully completed the annual training, and for each CODIS user, the appropriate documents were provided to the FBI. However, the Laboratory's case work match criteria was not detailed. The Laboratory's written policies were revised and we take no exception to the updated match policies. We make no recommendation to the FBI regarding the Laboratory's compliance with the NDIS procedures.

The NDIS operational procedures, which include the NDIS Laboratories Operational Procedures, establish the responsibilities and obligations of laboratories that participate in the CODIS program at the national level. The NDIS Operational Procedures provide detailed instructions for laboratories to follow when performing certain procedures pertinent to NDIS. The NDIS operational procedures we reviewed are listed in Appendix II of this report.

Results of the OIG Audit

We found that the Laboratory complied with the NDIS operational procedures we reviewed. Specifically, we found the Laboratory had sufficient measures to physically and electronically safeguard CODIS; adequate policies and procedures for expungement of DNA records, and the NDIS procedures were available and accessible to the CODIS users. These results are described in more detail below.

- The NDIS Security Requirements state that the NDIS participating Laboratory shall be responsible for providing adequate physical security of the CODIS servers and terminals against any unauthorized personnel gaining access to the computer equipment or to any of the stored data. We found that the CODIS workstations were located in a secure section inside the Laboratory building. The workstations were password protected, each CODIS user had a unique user name and password, and the system automatically logged users off after 10 minutes of inactivity. The CODIS server was located in a separate room inside the secure laboratory building.

- CODIS users are required to complete annual DNA Records Acceptance training. The FBI provided a list to us of Laboratory personnel who had received this mandatory annual training, which we compared to a list provided by the Laboratory. We found that all authorized personnel have successfully completed the annual training.
- For each CODIS user, the FBI requires that a participating laboratory submit fingerprint cards, background information, CODIS user information, and Privacy Act explanation to the FBI. We verified that all necessary documents were provided to the FBI for all CODIS users at the Laboratory.
- The NDIS Operational Procedures defines the procedure for NDIS participating laboratories to follow when confirming matches that are identified in NDIS. In addition, these procedures require that the CODIS Administrator must review and make best efforts to disposition matches within 30 business days. We selected a judgmental sample of five NDIS matches and reviewed available documentation and determine the Laboratory confirmed the matches in a timely manner.

We did note that the Laboratory's written casework match criteria was not detailed, it was simply listed as a responsibility of the CODIS Technical Manager. After mentioning this to the CODIS Administrator, the Laboratory's written policies were appropriately revised. As a result, we take no exception to the Laboratory's updated match policies.

Conclusion

We found that the Laboratory was in compliance with the NDIS participation requirements that we reviewed, the Laboratory provided adequate physical security of the CODIS servers and terminals, all required personnel had successfully completed the annual training, all necessary documents were provided to the FBI for all CODIS users at the Laboratory, and the judgmentally selected sample of five NDIS matches were confirmed in a timely manner.

We made no recommendations concerning our review of the NDIS Operational Procedures.

II. Compliance with Quality Assurance Standards

We found that the Laboratory complied with the Quality Assurance Standards (QAS) we tested. Specifically, we found that the Laboratory: (1) underwent Quality Assurance Standard reviews within designated timeframes, (2) had policies in place to help ensure laboratory access was limited to authorized personnel, and (3) had adequate procedures to ensure the integrity of evidence and convicted offender samples. We make no recommendations to the FBI regarding the Laboratory's compliance with the QAS.

During our audit, we considered the Forensic and Offender QAS issued by the FBI.⁷ These standards describe the quality assurance requirements that the Laboratory must follow to ensure the quality and integrity of the data it produces. We also assessed the two most recent QAS reviews that the laboratory underwent.⁸ The QAS we reviewed are listed in Appendix II.

Results of the OIG Audit

We found that the Laboratory complied with the Forensic and Offender QAS tested. Specifically, we found the Laboratory underwent Quality Assurance Standard reviews, had policies in place to help ensure Laboratory access was limited to authorized personnel, and had adequate procedures to ensure the integrity of evidence and convicted offender samples. These results are described in more detail below.

- The QAS requires laboratories to undergo an annual review, including an external review every 2 years. The Laboratory had external quality assurance reviews conducted in August 2011 and March 2012. The frequency of these reviews met the QAS requirements.

⁷ Forensic Quality Assurance Standards refer to the Quality Assurance Standards for Forensic DNA Testing Laboratories, effective September 1, 2011.

⁸ The QAS require that laboratories undergo annual audits. Every other year, the QAS requires that the audit be performed by an external agency that performs DNA identification analysis and is independent of the laboratory being reviewed. These audits are not required by the QAS to be performed in accordance with the *Government Auditing Standards* (GAS) and are not performed by the Department of Justice Office of the Inspector General. Therefore, we will refer to the QAS audits as reviews (either an internal laboratory review or an external laboratory review, as applicable) to avoid confusion with our audits that are conducted in accordance with GAS.

- We reviewed the Laboratory's prior 2 years of QAS review reports. Both the August 2011 and March 2012 reviews were conducted using the FBI's QAS Review Document and the FBI confirmed that QAS reviewers who conducted these reviews completed the FBI QAS Review training course.
- We toured the laboratory and observed that access to the Laboratory is controlled and limited to prevent access by unauthorized personnel. Specifically, the Laboratory has one entrance to the Laboratory for employees and the public. After entering the one entrance, employees swipe their key cards to further access the building while visitors ring a bell for assistance. Law enforcement personnel dropping off evidence go to the evidence drop window. There were security cameras on the exterior of the building and a building security system, which is set after hours. The system includes motion detectors inside the building. We found no deficiencies in the external security at the Laboratory, it is in compliance with the QAS requirements we tested.
- While touring the Laboratory, we also observed the procedures used by the Laboratory to ensure the integrity of physical evidence and convicted offender samples. Evidence chain of custody is tracked in the Laboratory's Information Management system (LIMS). Evidence is received and entered into LIMS, which generates a bar code number and sticker. Prior to processing, evidence is stored in the evidence storage room, which has shelves, locked refrigerators, and locked freezers. After evidence is analyzed the DNA packets are placed in the evidence vault, which also has dry storage, locked refrigerators and locked freezers. Laboratory staff have scan-card access to the storage room and vault.

Convicted Offender samples are entered into the Laboratory's DNA databank system which generates a barcode number and sticker. Prior to processing, the Convicted Offender samples are stored on shelves in the evidence receiving room and after processing they are stored in the evidence vault. Laboratory staff have scan-card access to the evidence receiving room and the evidence vault. Overall, we found no significant deficiencies in the security of evidence and offender samples, we found it to be in compliance with the QAS requirements we tested.

- The QAS requires amplified DNA to be generated, processed, and maintained in a room separate from the sample accessioning, evidence examination, DNA extraction, and PCR setup areas. We observed that the Laboratory has a separate amplification room. After examination,

extraction, and PCR set up are complete, the analyst places the evidence in a small metal pass-through-door to the amplification room. Based upon our observations, we did not identify any material deficiencies with regard to the Laboratory performing various DNA analysis processes in separate times and spaces.

- We learned that the Laboratory does not currently outsource the analysis of its forensic DNA samples to another laboratory and has not done so in the past 2 years.
- The QAS requires that an external quality assurance review be forwarded to the FBI's NDIS Custodian within 30 days of the participating laboratory's receipt of the report. We reviewed the submission of the most recent external reviews and found that the reports were submitted to the FBI's NDIS Custodian in a timely manner.

Conclusion

We found that the Laboratory complied with the FBI's Forensic QAS that we tested. Specifically, we found that the Laboratory: (1) underwent Quality Assurance Standard reviews within the last 2 years; (2) controlled and limited Laboratory access to authorized personnel; and (3) had adequate procedures to ensure the integrity of evidence and convicted offender samples. We made no recommendations concerning our review of Quality Assurance Standards.

III. Suitability of Forensic DNA Profiles in CODIS Databases

We found 99 of the 100 profiles we reviewed to be complete, accurate, and allowable for inclusion in NDIS. One profile was complete and accurate but, unallowable for inclusion in NDIS, as it came from a shoe removed directly from a suspect. The Laboratory removed the unallowable profile from NDIS prior to the start of our field work. As a result, we take no further exception to the profile and make no recommendation to the FBI.

We reviewed a sample of the Laboratory's Forensic DNA profiles to determine whether each profile was complete, accurate, and allowable for inclusion in NDIS. To test the completeness and accuracy of each profile, we established standards that require a profile include all the loci for which the analyst obtained results, and that the values at each locus match those identified during analysis. Our standards are described in more detail in Appendix II of this report.

The FBI's NDIS operational procedures establish the DNA data acceptance standards by which laboratories must abide. The FBI also developed a flowchart as guidance for the laboratories for determining what is allowable in the forensic index at NDIS. Laboratories are prohibited from uploading forensic profiles to NDIS that clearly match the DNA profile of the victim or another known person that is not a suspect. A profile at NDIS that matches a suspect may be allowable if the contributor is unknown at the time of collection, however, NDIS guidelines prohibit profiles that match a suspect if that profile could reasonably have been expected to be on an item at the crime scene or part of the crime scene independent of the crime. For instance, a profile from an item seized from the suspect's person, such as a shirt, or that was in the possession of the suspect when collected is generally not a forensic unknown and would not be allowable for upload to NDIS. The NDIS procedures we reviewed are listed in Appendix II of this report.

Results of the OIG Audit

We selected a sample of 100 profiles out of the 549 forensic profiles the Laboratory had uploaded to NDIS as of October 11, 2012. Of the 100 forensic profiles sampled, we found that 1 was unallowable for upload to NDIS. The remaining profiles sampled were complete, accurate, and allowable for inclusion in NDIS. The specific exception is explained in more detail below.

Profile Allowability

As part of our review, we examined each of the 100 forensic profiles in our sample to determine if the profile was, complete, accurate, and allowable based on NDIS guidelines. Specifically, our review examined each profile in the sample to determine its suitability based on NDIS guidelines such as: (1) whether a crime was committed; (2) whether the profile was obtained from the crime scene; and; (3) whether the profile was attributable to a putative perpetrator.

OIG Sample Number ND-13 was complete and accurate but not allowable; the sample was taken from a shoe removed directly from the suspect. When we brought this to the CODIS Administrators attention we were informed that the Laboratory removed the profile from NDIS prior to the start of field work. As a result, we take no further exception to the profile and make no recommendation to the FBI. According to the CODIS Administrator, the Laboratory also deleted OIG Sample Number ND-35 prior to our arrival because the case had been solved and the profile uploaded did not belong to the person who committed the homicide.

Conclusion

We found 99 of the 100 profiles we reviewed to be complete, accurate, and allowable for inclusion in NDIS. One profile was unallowable, as it came from a shoe removed directly from a suspect. The Laboratory removed the unallowable profile from NDIS prior to the start of field work. As a result, we made no recommendations concerning our review of Forensic DNA profiles.

OBJECTIVES, SCOPE, AND METHODOLOGY

We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Our audit generally covered the period from October 2010, through November 2012. The objectives of the audit were to determine if the: (1) Laboratory was in compliance with select National DNA Index System (NDIS) Operational Procedures; (2) Laboratory was in compliance with certain Quality Assurance Standards (QAS) issued by the FBI; and (3) Laboratory's forensic DNA profiles in CODIS databases were complete, accurate, and allowable for inclusion in NDIS. To accomplish the objectives of the audit, we:

- Examined external Laboratory QAS review reports and supporting documentation for corrective action taken, if any, to determine whether: (a) the Laboratory complied with the QAS, (b) repeat findings were identified, and (c) recommendations were adequately resolved.

In accordance with the QAS, the internal and external laboratory review procedures are to address, at a minimum, a laboratory's quality assurance program, organization and management, personnel qualifications, facilities, evidence control, validation of methods and procedures, analytical procedures, calibration and maintenance of instruments and equipment, proficiency testing of analysts, corrective action for discrepancies and errors, review of case files, reports, safety, and previous audits. The QAS require that internal and external reviews be performed by personnel who have successfully completed the FBI's training course for conducting such reviews. We obtained evidence from the FBI concerning the qualifications of the internal and external reviewers.

- Interviewed Laboratory officials to identify management controls, Laboratory operational policies and procedures, Laboratory certifications or accreditations, and analytical information related to DNA profiles.

- Toured the Laboratory to observe facility security measures as well as the procedures and controls related to the receipt, processing, analyzing, and storage of forensic evidence and convicted offender DNA samples.
- Reviewed the Laboratory's written policies and procedures related to expunging DNA profiles from NDIS and resolving matches among DNA profiles in NDIS.
- Reviewed supporting documentation for 5 of 39 NDIS matches to determine whether they were resolved in a timely manner. The Laboratory provided the universe of NDIS matches as of November 5, 2012. The sample was judgmentally selected to include both case-to-case and case-to-offender matches. This non-statistical sample does not allow projection of the test results to all matches.
- Reviewed the case files for selected forensic DNA profiles to determine if the profiles were complete, accurate, and allowable for inclusion in NDIS.

We obtained an electronic file identifying the specimen identification numbers of 549 searchable forensic profiles the Laboratory had uploaded to NDIS between October 1, 2007 and October 11, 2012. We limited our review to a sample of 100 profiles. This sample size was determined judgmentally because preliminary audit work determined that risk was not unacceptably high. (At A.1.PRG, step 1 it was determined that the Laboratory was accredited, and therefore had met minimum criteria for accreditation)

Using the judgmentally-determined sample size, we employed a stratified sample design to randomly select a representative sample of profiles in our universe. However, since the sample size was judgmentally determined, the results obtained from testing this limited sample of profiles may not be projected to the universe of profiles from which the sample was selected.

The objectives of our audit concerned the Laboratory's compliance with required standards and the related internal controls. Accordingly, we did not attach a separate statement on compliance with laws and regulations or a statement on internal controls to this report. See Appendix II for detailed information on our audit criteria.

AUDIT CRITERIA

In conducting our audit, we considered the NDIS Operational Procedures, QAS, and guidance issued by the FBI regarding forensic profile allowability in NDIS.⁹ However, we did not test for compliance with elements that were not applicable to the Laboratory. In addition, we established standards to test the completeness and accuracy of DNA profiles as well as the timely notification of DNA profile matches to law enforcement.

NDIS Operational Procedures

The NDIS Operational Procedures, which include the NDIS operational procedures, establish the responsibilities and obligations of laboratories that participate in NDIS. We focused our audit on specific sections of the following NDIS requirements:

- NDIS Laboratories Procedure
- Quality Assurance Standards Audit Procedure
- NDIS Confirmation and Hit Dispositioning Procedure
- NDIS DNA Records Procedure
- DNA Data Acceptance Standards
- NDIS Searches Procedure
- NDIS Security Requirements Procedure

Quality Assurance Standards

The FBI issued two sets of QAS: (1) QAS for Forensic DNA Testing Laboratories, effective September 1, 2011 (Forensic QAS); and (2) QAS for DNA Databasing Laboratories, effective September 1, 2011 (Offender QAS). The Forensic QAS and the Offender QAS describe the quality assurance requirements that the Laboratory should follow to ensure the quality and integrity of the data it produces.

For our audit, we generally relied on the reported results of the Laboratory's most recent annual external review to determine if the Laboratory was in compliance with the QAS. Additionally, we performed audit work to verify that the Laboratory was in compliance with the QAS

⁹ The FBI Flowchart is guidance issued to NDIS-participating laboratories separate from the NDIS operational procedures. The flowchart is contained in the 2010 CODIS Administrator's Handbook and has been provided to laboratories in forums such as CODIS conferences.

listed below because they have a substantial effect on the integrity of the DNA profiles uploaded to NDIS.

- Facilities (Forensic QAS and Offender QAS 6.1): The laboratory shall have a facility that is designed to ensure the integrity of the analyses and the evidence.
- Evidence Control (Forensic QAS 7.1): The laboratory shall have and follow a documented evidence control system to ensure the integrity of physical evidence. Where possible, the laboratory shall retain or return a portion of the evidence sample or extract.
- Sample Control (Offender QAS 7.1): The laboratory shall have and follow a documented sample inventory control system to ensure the integrity of the database and known samples.
- Analytical Procedures (Forensic QAS and Offender QAS 9.5): The laboratory shall monitor the analytical procedures using [appropriate] controls and standards.
- Review (Forensic QAS 12.1): The laboratory shall conduct administrative and technical reviews of all case files and reports to ensure conclusions and supporting data are reasonable and within the constraints of scientific knowledge.

(Offender QAS Standard 12.1): The laboratory shall have and follow written procedures for reviewing DNA records and DNA database information, including the resolution of database matches.

- [Reviews] (Forensic QAS and Offender QAS 15.1 and 15.2): The laboratory shall be audited annually in accordance with [the QAS]. The annual audits shall occur every calendar year and shall be at least 6 months and no more than 18 months apart. At least once every 2 years, an external audit shall be conducted by an audit team comprised of qualified auditors from a second agency(ies) and having at least one team member who is or has been previously qualified in the laboratory's current DNA technologies and platform.
- Outsourcing (Forensic QAS and Offender QAS Standard 17.1): A vendor laboratory performing forensic and database DNA analysis shall comply with these Standards and the accreditation requirements of federal law.

Forensic QAS 17.4: An NDIS participating laboratory shall have and follow a procedure to verify the integrity of the DNA data received

through the performance of the technical review of DNA data from a vendor laboratory.

Offender QAS Standard 17.4: An NDIS participating laboratory shall have, follow and document appropriate quality assurance procedures to verify the integrity of the data received from the vendor laboratory including, but not limited to, the following: Random reanalysis of database, known or casework reference samples; Inclusion of QC samples; Performance of an on-site visit by an NDIS participating laboratory or multi-laboratory system outsourcing DNA sample(s) to a vendor laboratory or accepting ownership of DNA data from a vendor laboratory.

Office of the Inspector General Standards

We established standards to test the completeness and accuracy of DNA profiles as well as the timely notification of law enforcement when DNA profile matches occur in NDIS. Our standards are listed below.

- **Completeness of DNA Profiles:** A profile must include each value returned at each locus for which the analyst obtained results. Our rationale for this standard is that the probability of a false match among DNA profiles is reduced as the number of loci included in a profile increases. A false match would require the unnecessary use of laboratory resources to refute the match.
- **Accuracy of DNA Profiles:** The values at each locus of a profile must match those identified during analysis. Our rationale for this standard is that inaccurate profiles may: (1) preclude DNA profiles from being matched and, therefore, the potential to link convicted offenders to a crime or to link previously unrelated crimes to each other may be lost; or (2) result in a false match that would require the unnecessary use of laboratory resources to refute the match.
- **Timely Notification of Law Enforcement When DNA Profile Matches Occur in NDIS:** Laboratories should notify law enforcement personnel of NDIS matches within 2 weeks of the match confirmation date, unless there are extenuating circumstances. Our rationale for this standard is that untimely notification of law enforcement personnel may result in the suspected perpetrator committing additional, and possibly more egregious, crimes if the individual is not deceased or already incarcerated for the commission of other crimes.

FBI RESPONSE TO THE DRAFT REPORT



U.S. Department of Justice
Federal Bureau of Investigation

Washington, D.C. 20535-0001

April 9, 2013

David M. Sheeren, Regional Audit Manager
Denver Regional Audit Office
Office of the Inspector General
1120 Lincoln, Suite 1500
Denver, CO 80203

Dear Mr. Sheeren:

Your memorandum to Director Mueller forwarding the draft audit report for the North Dakota Office of Attorney General Crime Laboratory, Bismarck, North Dakota (Laboratory), has been referred to me for response.

Your draft report contained no recommendations relating to the Laboratory's compliance with the FBI's Memorandum of Understanding and *Quality Assurance Standards for DNA Testing Laboratories and DNA Databasing Laboratories*. The CODIS Unit reviewed the draft report and since it appears that the Laboratory is in compliance with NDIS participation requirements, the CODIS Unit has no significant comments to provide about the draft report.

Thank you for sharing the draft audit report with us. If you have any questions, please feel free to contact Jennifer C. Wendel, Chief of the CODIS Unit, at (703) 632-8315.

Sincerely,

A handwritten signature in cursive script that reads "Alice R. Isenberg".

Alice R. Isenberg, Ph.D.
Section Chief
Biometrics Analysis Section
FBI Laboratory