



**AUDIT OF COMPLIANCE WITH STANDARDS GOVERNING
COMBINED DNA INDEX SYSTEM ACTIVITIES AT THE
OHIO BUREAU OF CRIMINAL IDENTIFICATION
AND INVESTIGATION
LONDON, OHIO**

U.S. Department of Justice
Office of the Inspector General
Audit Division

Audit Report GR-50-11-007
September 2011

**AUDIT OF COMPLIANCE WITH STANDARDS GOVERNING COMBINED
DNA INDEX SYSTEM ACTIVITIES AT THE
OHIO BUREAU OF CRIMINAL IDENTIFICATION
AND INVESTIGATION
LONDON, OHIO**

EXECUTIVE SUMMARY

The Department of Justice, Office of the Inspector General, Audit Division, has completed an audit of compliance with standards governing Combined DNA Index System (CODIS) activities at the Ohio Bureau of Criminal Identification and Investigation Laboratory (Laboratory) in London, Ohio.

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 enable 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, is managed by the FBI as the nation's DNA database containing DNA profiles uploaded by law enforcement agencies across the United States. 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 database containing DNA profiles from local laboratories and

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.

state offenders. The Local DNA Index System (LDIS) is used by local laboratories.

OIG Audit Objectives

Our audit generally covered the period from October 2008 through October 2010. The objectives of our audit were to determine if: (1) the Laboratory was in compliance with the NDIS participation requirements; (2) the Laboratory was in compliance with the 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 complied with the NDIS participation requirements we reviewed. Specifically, we found that the Laboratory maintained adequate security over its facilities and CODIS servers, submitted the required background information on CODIS users to the FBI, kept records showing CODIS users were properly trained, and were timely in resolving the NDIS matches we reviewed.
- The Laboratory generally complied with the QAS we reviewed. Specifically, we found that the Laboratory had adequate laboratory security policies and conducted annual site visits of its contracted laboratory.
- We reviewed 100 of the 4,510 forensic profiles the Laboratory had uploaded to NDIS as of September 22, 2010. Of the 100 forensic profiles sampled, 4 were unallowable for inclusion in NDIS. The profiles were either missing supporting information to prove they were allowable for upload to NDIS, belonged to the victim, or could not be connected to the crime scene. The Laboratory removed all four profiles from NDIS. Because all four unallowable profiles were processed by the Laboratory prior to December 2003, it appears the Laboratory is now following procedures to prevent entry of unallowable profiles into CODIS. The remaining 96 profiles we reviewed were complete, accurate, and allowable for inclusion in NDIS.

The results of our audit are discussed in detail in the findings section of the report. 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.

TABLE OF CONTENTS

INTRODUCTION	1
Background	1
OIG Audit Objectives	1
Legal Foundation for CODIS.....	1
CODIS Structure	2
Laboratory Information	6
FINDINGS AND RECOMMENDATIONS	7
I. Compliance with NDIS Participation Requirements.....	7
II. Compliance with the Quality Assurance Standards.....	9
III. Suitability of Forensic DNA Profiles in CODIS Databases.....	12
APPENDIX I: OBJECTIVES, SCOPE, AND METHODOLOGY	15
APPENDIX II: AUDIT CRITERIA	18
NDIS Participation Requirements.....	18
Quality Assurance Standards	18
Office of the Inspector General Standards	20
APPENDIX III: AUDITEE RESPONSE	18
APPENDIX IV: FEDERAL BUREAU OF INVESTIGATION RESPONSE	22

INTRODUCTION

The Department of Justice, Office of the Inspector General, Audit Division, has completed an audit of compliance with standards governing Combined DNA Index System (CODIS) activities at the Ohio Bureau of Criminal Identification and Investigation Laboratory (Laboratory) in London, Ohio.

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.² 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 November 2008 through October 2010. The objectives of our audit were to determine if: (1) the Laboratory was in compliance with the National DNA Index System (NDIS) participation requirements; (2) the Laboratory was in compliance with the 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, while the criteria used to conduct our audit are presented in Appendix II.

Legal Foundation for CODIS

The FBI began the CODIS program 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

² 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.

with subsequent amendments, has been codified in a federal statute (Statute) providing the legal authority to establish and maintain NDIS.³

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.

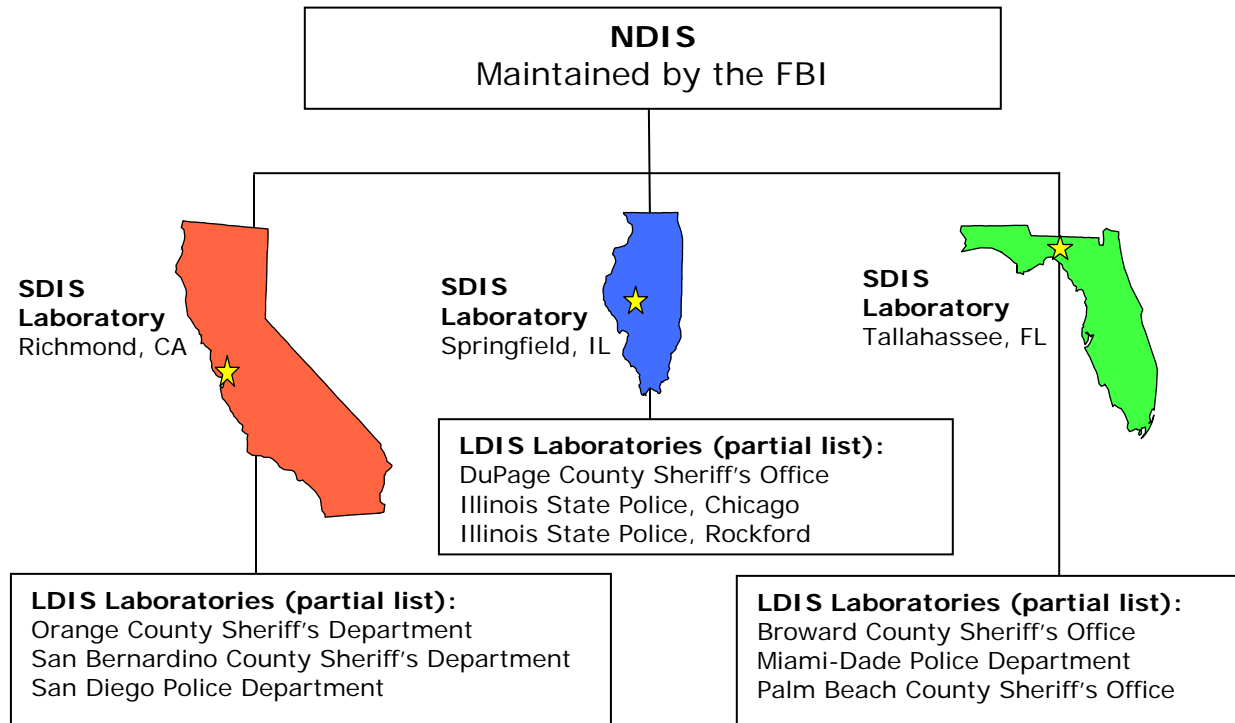
CODIS Structure

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 is managed by the FBI as the nation's DNA database containing DNA profiles uploaded by participating states, (2) the State DNA Index System (SDIS) is used at the state level to serve 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) is 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

³ 42 U.S.C.A. § 14132 (2006).

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 presents an example of how the system hierarchy works.

Example of System Hierarchy within CODIS



National DNA Index System

NDIS is the highest level in the CODIS hierarchy and enables the 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. Within NDIS are seven searchable indices discussed below.

- Convicted Offender Index contains profiles generated from persons convicted of qualifying offenses.⁴

⁴ The phrase "qualifying offenses" is used here to refer to local, state, or federal crimes that require a person to provide a DNA sample in accordance with applicable laws.

- 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.⁵
- 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.⁶
- Relatives of Missing Person Index is comprised of DNA profiles generated from the biological relatives of individuals reported missing.

Although CODIS is comprised of multiple indices or databases, the two main functions of the system are to: (1) generate investigative leads that may help in solving crimes, and (2) identify missing and unidentified persons.

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. Those persons may be identified through matches between indices in CODIS, such

⁵ 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.

⁶ 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.

as through matches between the profiles in the Missing Persons Index and the Unidentified Human (Remains) Index. Identifications may also be generated through matches between the Unidentified Human (Remains) Index and the Relatives of Missing Persons Index. The profiles within the Missing Persons and Unidentified Human (Remains) Indices may also be vetted against the Forensic, Convicted Offender, Arrestee, and Legal Indices to provide investigators with leads in solving missing and unidentified persons cases.

State and Local DNA Index System

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.

The utility of CODIS relies upon the completeness, accuracy, and quantity 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.⁷ 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. CODIS becomes more useful as the quantity of DNA profiles in the system increases because the potential for additional leads rises. However, laws and regulations exclude certain types of profiles from being uploaded to CODIS to prevent

⁷ A "locus" is a specific location on a chromosome. The plural form of locus is loci.

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 participation requirements and the profiles uploaded to CODIS are complete, accurate, and allowable for inclusion in NDIS.

Laboratory Information

The audited Laboratory participates in the CODIS program as both a State DNA Index System Laboratory and Local DNA Index System Laboratory. The Laboratory began using DNA to process criminal cases in 1997 and started uploading profiles to NDIS in 2001. The Laboratory performs analysis on both convicted offender and forensic samples. However, our audit focused on the analysis of forensic profiles. The Laboratory contracted with an outside laboratory for the analysis of forensic samples; from 2008 through 2010, 2,807 profiles were outsourced for analysis. We verified that the Laboratory received its last accreditation by the American Society of Crime Laboratory Directors/ Laboratory Accreditation Board (ASCLD/LAB) in 2007 and will be eligible for reaccreditation in 2012.

FINDINGS AND RECOMMENDATIONS

I. Compliance with NDIS Participation Requirements

The Laboratory complied with the NDIS participation requirements we reviewed.

The NDIS participation requirements, which consist of the MOU and the NDIS Procedure Manual, establish the responsibilities and obligations of laboratories that participate in the CODIS program at the national level. The MOU describes the CODIS-related responsibilities of both the Laboratory and the FBI. The NDIS Procedure Manual is comprised of the NDIS operational procedures and provides detailed instructions for laboratories to follow when performing certain procedures pertinent to NDIS. The NDIS participation requirements we reviewed are listed in Appendix II of this report.

Results of the OIG Audit

We found that the Laboratory complied with the NDIS participation requirements we reviewed. Specifically, we found that the Laboratory maintained adequate security over its facilities and CODIS servers, submitted the required background information on CODIS users to the FBI, kept records showing CODIS users were properly trained, and were timely in resolving the NDIS matches we reviewed. The results of our audit are described in more detail below.

- We interviewed the Backup CODIS Administrator and conducted a walk-through tour of the building and the Laboratory.⁸ We identified no significant concerns regarding the Laboratory's procedures for securing the CODIS server or the Laboratory's facilities.
- We interviewed the CODIS Administrator to determine that appropriate staff have received a copy of the NDIS procedures manual and measures have been taken to ensure personnel understand and abide by the manual. We also interviewed two CODIS users and determined that they understood NDIS procedures and could access the procedures via the Laboratory's online system.

⁸ We interviewed the Backup CODIS Administrator because the CODIS Administrator was out of the office at the time of our audit.

- We verified with the FBI that all Laboratory CODIS users have completed the 2010 DNA Records Acceptable at NDIS training.
- The Laboratory is required to submit certain background and security information to the FBI for each CODIS user. We verified that the Laboratory submitted the required information to the FBI.
- We interviewed the Laboratory's Quality Assurance Coordinator and determined the Laboratory was in compliance with NDIS requirements for the maintenance of personnel records.
- We reviewed a sample of 10 NDIS matches and determined that each match was confirmed by the Laboratory in a timely manner, and when applicable, the investigators were notified.

Conclusion

We found the Laboratory to be in compliance with all areas of NDIS participation requirements that we reviewed. We made no recommendations concerning our review of NDIS participation requirements.

II. Compliance with the Quality Assurance Standards

The Laboratory complied with the Forensic Quality Assurance Standards we reviewed.

During our audit, we considered the Forensic Quality Assurance Standards (QAS) issued by the FBI.⁹ 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 most recent QAS review that the laboratory underwent.¹⁰ The QAS we reviewed are listed in Appendix II.

Results of the OIG Audit

We found that the Laboratory complied with the Forensic QAS tested. These results are described in more detail below.

- The Laboratory underwent a QAS review in each of the last 2 calendar years as required by the QAS for laboratory reviews. In May 2010, the Laboratory underwent a QAS review by internal reviewers. In March 2009, the laboratory underwent a QAS review by external reviewers.
- We reviewed the most recent QAS reports provided by the Laboratory's Quality Assurance Coordinator. The FBI's QAS Review Document was used to conduct both the internal and external reviews. We contacted the FBI and verified that at least one reviewer on the internal and external audit teams had successfully completed the FBI QAS Review training course. The reviewers reported two instances of non-compliance in the 2009 external report and three instances of non-compliance in the 2010 internal report. According to the 2009 external review report, the Laboratory failed to follow documented procedures that minimize loss contamination and/or deleterious change of evidence, and the

⁹ Forensic Quality Assurance Standards refers to the Quality Assurance Standards for Forensic DNA Testing Laboratories, effective July 1, 2009.

¹⁰ 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.

Laboratory failed to follow written procedures for taking corrective action whenever proficiency testing discrepancies and/or casework errors were detected. According to the 2010 internal review report, the Laboratory failed to follow written procedures for cleaning and decontaminating facilities and equipment, failed to follow written analytical procedures approved by the technical leader, and failed to follow a documented program for conducting performance checks and calibrating equipment and instruments. We reviewed the corrective action taken by the Laboratory and determined that it established procedures as appropriate and adequately addressed the 2009 external and 2010 internal QAS reviewers' findings.

- The QAS require that the Laboratory submit external QAS review reports to the NDIS Custodian within 30 days of the Laboratory receiving them. The Laboratory's Quality Assurance Coordinator stated that the latest external review report was submitted to the NDIS Custodian within 30 days of the report's issuance. However, the Laboratory did not maintain documentation of when it received the report. We reviewed the latest external review reports dated April 2008 and March 2009 and contacted the NDIS Audit Review Panel to determine when the reports were received by the NDIS Custodian. We found that the two latest reports were received in November 2008 and July 2009, respectively. However, because the Laboratory did not have a record of when it received the reports, we were not able to verify compliance with the 30 day standard.
- During our audit, we reviewed the prior years' audit reports to ensure there were no repeat findings. We found that one finding in the 2010 internal review report was also a finding in the 2008 external report. We reviewed the corrective action taken to resolve this finding related to conducting performance checks and calibrating equipment and instruments and found that the Laboratory contested the finding in the 2008 external report. The Laboratory addressed this same finding in the 2010 internal report and took corrective action by specifying a standard set of check logs and responsibilities. Upon reviewing the corrective action taken by the Laboratory, we found that the Laboratory adequately addressed the external and internal QAS reviewers' findings.
- We asked the reviewer who conducted the most recent external QAS review to certify that she had no impairments to her independence. The QAS reviewer provided us with this certification.

- We toured the Laboratory building and interviewed the Backup CODIS Administrator, and we determined that the facility appeared to have adequate physical access controls in place.
- We interviewed the Backup CODIS Administrator and reviewed written policies to determine that the Laboratory appeared to have adequate procedures in place to ensure the integrity of physical evidence.
- We interviewed the Backup CODIS Administrator and reviewed policies and practices regarding the separation of known and unknown samples during the analysis process. We determined that the policies and procedures appeared to be adequate.
- We interviewed the Laboratory's Quality Assurance Coordinator and reviewed applicable procedures, and we determined that the Laboratory appeared to be in compliance with standards governing the retention of samples after analysis.
- We contacted Laboratory officials and found that although the Laboratory is not currently outsourcing the analysis of profiles, the Laboratory did outsource the analysis of profiles during the past 2 years. We obtained the contracted laboratory's latest QAS review and accreditation materials and found no instances of noncompliance.
- We interviewed the Laboratory's Quality Assurance Coordinator and determined that the Laboratory has procedures requiring review of 100 percent of outsourced work, including raw data and values of loci.
- We interviewed the Laboratory's Quality Assurance Coordinator and reviewed the Laboratory's site visit reports and confirmed that the Laboratory had performed annual site visits of a laboratory to which it outsourced the analysis of some DNA samples.

Conclusion

We made no recommendations concerning our review of Quality Assurance Standards.

III. Suitability of Forensic DNA Profiles in CODIS Databases

Of the 100 forensic profiles we reviewed, 96 profiles were complete, accurate, and allowable for inclusion in NDIS. We identified four profiles that were not allowable for inclusion in NDIS. The profiles were either missing supporting information to sustain their allowability in NDIS, belonged to the victim, or could not be connected to the crime scene.

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.¹¹ 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 NDIS operational procedures establish the DNA data acceptance standards by which laboratories must abide. These procedures prohibit a laboratory from uploading forensic profiles to NDIS that clearly match the DNA profile of the victim or another known person, unless the known person is a suspected perpetrator. The NDIS procedures we reviewed are listed in Appendix II of this report.

Results of the OIG Audit

We selected a random sample of 100 profiles out of the 4,510 forensic profiles the Laboratory had uploaded to NDIS as of September 22, 2010. Of the 100 forensic profiles sampled, we found 4 were unallowable for upload to NDIS. The remaining 96 profiles sampled were complete, accurate, and allowable for inclusion in NDIS. The specific exceptions we identified are explained in more detail below.

OIG Sample Number CA-25

The Laboratory was unable to provide information on Sample Number CA-25; thus we were unable to determine the allowability, completeness, and accuracy of this profile. According to the CODIS Administrator, Sample Number CA-25 was from a rape case from 1990. In prior years, the Laboratory's procedures for this type of crime required that

¹¹ When a laboratory's universe of DNA profiles in NDIS exceeds 1,500, our sample is taken from SDIS rather than directly from NDIS. See Appendix I for further description of the sample selection.

the case be purged after 10 years in the system. All case notes and crime-related information on the case were destroyed, and thus there is insufficient documentation to support the profile's inclusion in NDIS. The CODIS Administrator stated that in recent years the Laboratory implemented retention procedures to ensure case notes and related information for rape cases that are entered into CODIS are not destroyed. The Laboratory now marks the case file for all CODIS rape cases with a checkmark to ensure supporting documentation is not destroyed after the 10-year period. Once we informed the Laboratory of the issue related to sample CA-25, the Laboratory deleted the profile from CODIS.

OIG Sample Number CA-62

Sample Number CA-62 was taken from a pillow belonging to a victim. Information in the case file did not indicate that a crime had occurred and that an elimination standard was taken from the victim. We informed the Laboratory of this issue and the Laboratory deleted this profile from CODIS.

OIG Sample Number CA-71

According to the accompanying police report, sample Number CA-71 was taken from money "circulating" at a store near a crime scene. The police report also indicated that the suspect may have brought the money into the store. Although the specimen did not come from a crime scene, it was entered into CODIS. We informed the Laboratory of this issue, and the Laboratory deleted this profile from CODIS.

OIG Sample Number CA-93

According to case file information, sample CA-93 was taken from the "clothing of a suspect." The information in the case file did not indicate that the specimen was collected from a crime scene. The profile had been technically reviewed for accuracy and was otherwise complete. However, it should not have been uploaded because there was not sufficient information to indicate that the specimen came from the crime scene. We informed the Laboratory of this issue, and the Laboratory deleted this profile from CODIS.

Conclusion

Out of the 100 profiles we reviewed four were unallowable for inclusion in NDIS. The remaining profiles were complete, accurate, and allowable for inclusion in NDIS. All four of the unallowable profiles in our sample were processed by the Laboratory prior to December 2003. The Backup CODIS Administrator explained that early on when NDIS was a new tool, the

Laboratory uploaded nearly everything into the system. It appears that the Laboratory has revised its procedures to ensure only allowable profiles are entered into CODIS. 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 November 2008 through October 2010. The objectives of the audit were to determine if the: (1) Laboratory was in compliance with the NDIS participation requirements; (2) Laboratory was in compliance with the 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 internal and external Laboratory review reports and supporting documentation for corrective action taken, if any, to determine: (a) if the Laboratory complied with the QAS, (b) whether repeat findings were identified, and (c) whether recommendations were adequately resolved.¹²

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.

¹² 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.

As permitted by GAS 7.42 (2007 revision), we generally relied on the results of the Laboratory's external laboratory reviews to determine if the Laboratory complied with the QAS.¹³ In order to rely on the work of non-auditors, GAS requires that we perform procedures to obtain sufficient evidence that the work can be relied upon. Therefore, we: (1) obtained evidence concerning the qualifications and independence of the individuals who conducted the review and (2) determined that the scope, quality, and timing of the audit work performed was adequate for reliance in the context of the current audit objectives by reviewing the evaluation procedure guide and resultant findings to understand the methods and significant assumptions used by the individuals conducting the reviews. Based on this work, we determined that we could rely on the results of the Laboratory's external laboratory review.

- 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 conducting internal reviews, resolving review findings, expunging DNA profiles from NDIS, and resolving matches among DNA profiles in NDIS.
- Reviewed supporting documentation for 10 of 861 NDIS matches to determine whether they were resolved in a timely manner. The Laboratory provided the universe of 861 NDIS matches as of October 7, 2010. 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.

¹³ We also considered the results of the Laboratory's internal laboratory review, but could not rely on it because it was not performed by personnel independent of the Laboratory. Further, as noted in Appendix II, we performed audit testing to verify Laboratory compliance with specific Quality Assurance Standards that have a substantial effect on the integrity of the DNA profiles uploaded to NDIS.

- Reviewed supporting documentation to determine whether the Laboratory provided adequate vendor oversight.
- Reviewed the case files for selected forensic DNA profiles to determine if the profiles were developed in accordance with the Forensic QAS and were complete, accurate, and allowable for inclusion in NDIS.

We were unable to obtain the forensic profile information directly from NDIS because of the large number of profiles involved and because FBI management controls at the NDIS level prohibit the dissemination of information in an electronic format. Therefore, working in conjunction with the contractor used by the FBI to maintain NDIS and the CODIS software, the Laboratory provided us with an electronic file identifying the 4,510 STR forensic profiles the Laboratory had uploaded to NDIS as of September 22, 2010. We verified that the total number of the Laboratory's profiles per the NDIS Custodian agreed with the number of profiles we received from the Laboratory. Because the total numbers agreed, we considered this universe of profiles to be representative of the Laboratory's profiles contained in NDIS. 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.

- Using the judgmentally determined sample size, we randomly selected a representative sample of labels associated with specific profiles in our universe to reduce the effect of any patterns in the list of profiles provided to us. However, because 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 participation requirements and the Quality Assurance Standards (QAS). 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 Participation Requirements

The NDIS participation requirements, which consist of the Memorandum of Understanding (MOU) and the NDIS operational procedures, establish the responsibilities and obligations of laboratories that participate in NDIS. The MOU requires that NDIS participants comply with federal legislation and the QAS, as well as NDIS-specific requirements accompanying the MOU in the form of appendices. We focused our audit on specific sections of the following NDIS operational procedures.

- DNA Data Acceptance Standards
- DNA Data Accepted at NDIS
- QAS Audits
- NDIS DNA Auto searches
- Confirm an Interstate Candidate Match
- General Responsibilities
- Initiate and Maintain a Laboratory's Participation in NDIS
- Security Requirements
- CODIS Users
- CODIS Administrator Responsibilities
- Access to, and Disclosure of, DNA Records and Samples
- Upload of DNA Records
- Expunge a DNA Record

Quality Assurance Standards

The FBI issued two sets of Quality Assurance Standards QAS: QAS for Forensic DNA Testing Laboratories, effective July 1, 2009 (Forensic QAS); and QAS for DNA Databasing Laboratories, effective July 1, 2009 (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 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 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.

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.

AUDITEE RESPONSE

We provided a copy of the draft report to the Ohio Bureau of Criminal Identification and Investigation. However, during the exit conference, Laboratory officials indicated that they would not be providing a response to the report.

FEDERAL BUREAU OF INVESTIGATION RESPONSE



U.S. Department of Justice

Federal Bureau of Investigation

Washington, D.C. 20535-0001

September 28, 2011

Carol S. Taraszka
Regional Audit Manager
Chicago Regional Audit Office
Office of the Inspector General
500 West Madison Street, Suite 3510A
Chicago, IL 60661-2590

Dear Ms. Taraszka:

Your memorandum to Director Mueller forwarding the draft audit report for the Ohio Bureau of Criminal Identification and Investigation, London, Ohio (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 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 Luttmann, Chief of the CODIS Unit, at (703) 632-8315.

Sincerely,

//s//

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