



**AUDIT OF COMPLIANCE WITH STANDARDS
GOVERNING COMBINED DNA INDEX
SYSTEM ACTIVITIES AT THE SOUTH
DAKOTA FORENSIC LABORATORY
PIERRE, SOUTH DAKOTA**

U.S. Department of Justice
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Audit Division

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COMBINED DNA INDEX SYSTEM ACTIVITIES AT THE SOUTH DAKOTA FORENSIC LABORATORY PIERRE, SOUTH DAKOTA

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 South Dakota Forensic Laboratory (Laboratory).

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

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.

OIG Audit Objectives

Our audit generally covered the period from October 2008 through September 2010. The objectives of our audit were to determine if: (1) the South Dakota Forensic 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.

- We did not identify material deficiencies with regard to our review of CODIS access and the Laboratory's access to NDIS policies and procedures. However, we found that the Laboratory's personnel records retention policy did not adhere to the NDIS procedures requirement to retain records for a minimum of 10 years. The Laboratory modified its record retention policy while we were on site to adhere to the NDIS requirement.
- We reviewed the Laboratory's most recent internal and external reviews and found the Laboratory to be in compliance with QAS requirements in the 2009 review but noted two findings of non-compliance in the 2010 review. The Laboratory had corrected these non-compliance issues prior to our audit. We reviewed the Laboratory's policies and procedures related to sample security, sample processing, and sample retention and did not note any material non-compliance with the QAS.
- We reviewed 84 of the Laboratory's 336 forensic DNA profiles and found they were complete and accurate. We found 83 profiles were allowable for inclusion in the Forensic Index at NDIS. However, one profile was unallowable because there was not enough information in the case file to determine the source of the profile and other essential information. Prior to the issuance of this report, Laboratory officials deleted the unallowable profile from the Forensic Index.

We discussed the results of our audit with Laboratory officials and included their comments in the report as applicable in the Findings section of this report. In addition, we requested a written response to a draft of our audit report from the FBI and the Laboratory. These responses are shown in Appendices III and IV. Since there were no significant findings, we did not make any recommendations and issued the report closed. Our audit

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

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INTRODUCTION

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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 covered the period from October 2008 through September 2010. The objectives of our audit were to determine if: (1) the South Dakota Forensic 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; and Appendix II contains the criteria used to conduct the audit.

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

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.

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.

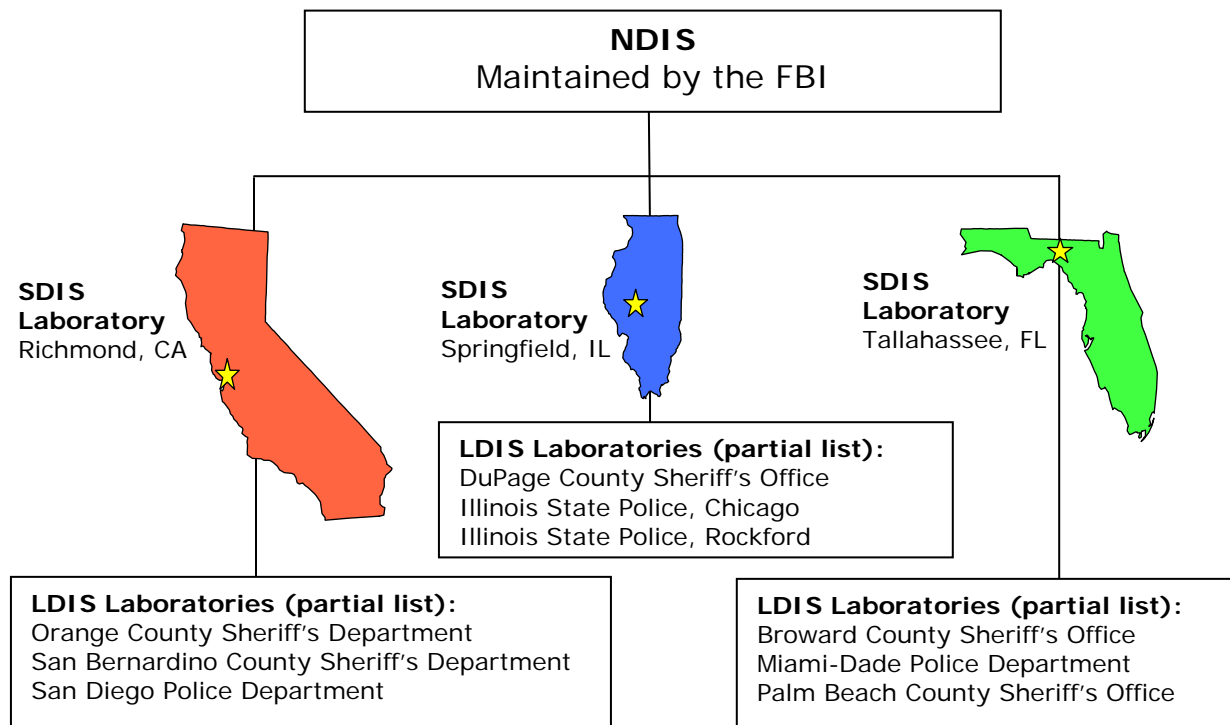
CODIS Structure

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 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

² 42 U.S.C.A. § 14132 (2006).

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

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.

- 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 U.S. 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.

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.

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.

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 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.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

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

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

Laboratory Information

The Laboratory is an SDIS Laboratory and serves the entire state of South Dakota, including approximately 360 agencies. This includes all police departments, all sheriffs' offices, the South Dakota Department of Game, Fish and Parks, the FBI, the Bureau of Indian Affairs (BIA), the Bureau of Alcohol, Tobacco, Firearms, and Explosives (ATF), the Drug Enforcement Agency (DEA), the U.S. Fish and Wildlife Services, and other justice related agencies. This is the only DNA laboratory in the state of South Dakota. There are 66 counties in South Dakota, and approximately 800,000 people. The Laboratory began using CODIS in May 1997 and uploading profiles to NDIS in November 1998. The Laboratory began its Convicted Offender and Arrestee database on July 1, 1990, but does not maintain a legal database. The Laboratory began using DNA in the processing of criminal case evidence in December 2002. The Laboratory has outsourced the analysis of DNA samples for offenders for the past 2 years but has analyzed all forensic DNA samples in-house at the Laboratory. The Forensic Quality Services accredited the Laboratory to the International Organization for Standardization (ISO) standards and the Laboratory's next accreditation/certification renewal is due in January 2012.

FINDINGS AND RECOMMENDATIONS

I. Compliance with NDIS Participation Requirements

The results of our testing of compliance with NDIS Standards identified only one instance of non-compliance 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, with one exception. Specifically, we found that the Laboratory's policy for record retention did not adhere to the NDIS participation requirement to retain personnel records for a minimum of 10 years. The Laboratory amended its personnel records requirements to adhere to the NDIS requirement. These results are described in more detail below.

- NDIS procedures require that participating Laboratories maintain personnel files for CODIS users, including proficiency testing, training, and other reports, for 10 years. According to Laboratory officials, personnel records, including professional development records, DNA and non-DNA training, and educational transcripts, are kept for 5 years from the last date of employment. We discussed with Laboratory management the FBI's requirement to retain these records for 10 years. While we were on site, the Laboratory amended its record retention policy to require that personnel records be kept for 10 years after the last day of employment.

We found that the Laboratory complied with the other NDIS participation requirements we reviewed, as described below.

- NDIS requires that CODIS be physically and electronically safeguarded from unauthorized use and only accessible to limited approved personnel. The Laboratory's two CODIS workstations are in a separate

room in secured Laboratory space and only CODIS users are allowed to use these workstations. All users have their own CODIS user password, and the computer screen locks after 10 minutes of inactivity. The CODIS Administrator makes backup tapes weekly and stores them in an off-site locked facility monthly.

- NDIS operational procedures require that CODIS users be aware of the NDIS procedures, know where to find them, and have access to them. We confirmed with all three of the Laboratory's CODIS users that they were aware of the procedures. We verified that Laboratory staff knew where to find and access the procedures in the Laboratory by having two of the three CODIS users show us where to find them.
- CODIS users are required to complete annual DNA Records Acceptance training. We verified with the FBI that all current CODIS users had completed the web-based training.
- The FBI requires that the Laboratory submit fingerprint cards, background information, CODIS user information, and other appropriate documentation regarding CODIS users. We verified that the Laboratory submitted all required information for each CODIS user to the FBI.
- NDIS procedures require a match confirmation process when matches are identified in the CODIS system. We judgmentally selected a sample of five NDIS matches and found the Laboratory to be timely in match confirmation requests, match confirmations, confirmation dispositions, and the notification to investigators of forensic matches.
- SDIS laboratories are required to have procedures that discuss when a laboratory is required to expunge a profile from NDIS. The Laboratory has policies and procedures for expunging profiles, which include removing the sample from the Laboratory and NDIS databases and destroying the sample.
- We reviewed documentation for the four expungement requests the Laboratory received between July 1, 2003, and November 5, 2010. We verified that the Laboratory acted on all expungement requests and followed the appropriate policies and procedures for all expungements. Prior to July 1, 2003, the Laboratory had administratively expunged 194 records because of changes in the laws of South Dakota. We did not review these expungements.

- NDIS requirements exist regarding one-time searches of outsourced offender DNA data. The Laboratory has not requested a one-time search of its outsourced offender profiles.
- The NDIS operational procedure titled *Review of External Audits* requires that external quality assurance review reports be forwarded to the NDIS Custodian within 30 days of the Laboratory's receipt of the report. We reviewed the submission of the most recent external review and found that the report was submitted to the NDIS custodian in a timely manner.

Conclusion

For the areas we tested, we determined that the Laboratory was in compliance with NDIS participation requirements. We did not identify any deficiencies in safeguarding CODIS, annual training forms, or NDIS matches. We found one exception with the retention of personnel records but the Laboratory amended its procedure manual to follow FBI policy. Therefore, we made no recommendations concerning our review of NDIS participation requirements.

II. Compliance with Quality Assurance Standards

We reviewed the Laboratory's compliance with select FBI quality assurance standards (QAS) by examining the most recent internal and external reviews and the Laboratory's policies and procedures for sample processing, sample security, and sample retention. We found the Laboratory was in compliance with the QAS we reviewed.

During our audit, we considered the Forensic and Offender Quality Assurance Standards (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 we tested. Specifically, we found the Laboratory is reviewed annually, has appropriate building and evidence security, and has appropriate quality assurance policies. These results are described in more detail below.

- The QAS requires laboratories to undergo an annual review, including an external review every 2 years. We determined that the Laboratory complied with this requirement by undergoing an annual review and by alternating between an internal and an external review each year.
- We obtained the most recent external and internal reviews for the Laboratory. We determined that for both reviews the FBI audit document was used, all instances of noncompliance noted in the reports were reported as findings, all reviewers had completed the FBI's QAS reviewer training course, and corrective actions for review

⁷ Forensic Quality Assurance Standards refer to the Quality Assurance Standards for Forensic DNA Testing Laboratories, effective July 1, 2009.

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.

of findings were developed by the Laboratory. Although the external review report contained findings, we did not identify repeat deficiencies.

- In order for us to rely on the external review report, external reviewers must confirm they were independent at the time of the review. We requested and received a completed reviewer independence statement from the reviewer participating in the external review.
- We verified that the entrances to the Laboratory are properly secured and controlled with key cards, security cameras, and a receptionist for the public entrance to prevent access by unauthorized personnel. Various areas within the Laboratory are also secured by key card scanners allowing access only to authorized personnel for specific areas of the building. All visitors are escorted within the building. Overall security at the Laboratory appears to be adequate and in compliance with the QAS requirements that we tested.
- The integrity of physical evidence is maintained by the Laboratory in accordance with the QAS standards that we tested. Specifically, the Evidence Custodians utilize a computer program to generate a unique barcode for each evidence container. The unique barcode includes the Laboratory identifier, year the evidence was submitted, case number, Laboratory item number, and the submitting agency item number. Through observation, we determined that evidence is properly stored from the point of receipt through processing. To ensure the accuracy of data loaded into the database, the Laboratory technically reviews all case files and completes a checklist for each sample prior to uploading to CODIS.
- The QAS requires laboratories to perform evidence examination, DNA Extraction, and PCR setup at separate times or in separate places. For known and unknown samples, the Laboratory performs the examination and extraction, in separate rooms and times within the Laboratory from the PCR setup and amplification.
- The Laboratory stores the offender database in a secure area and retains the samples indefinitely. Specific to forensic samples, prior to processing an analyst takes cuttings that are consumed in testing. The original evidence is returned to the submitting agency.
- The Laboratory contracted out the analysis of convicted offender samples in the past 2 years. We verified that the subcontractor met

the QAS requirements to have an external review performed every other year. In addition, the Laboratory reviewed the integrity of all samples received from the subcontractor and the subcontracted laboratory met the specific testing and reporting requirements detailed in its contract. We found the Laboratory is in compliance with the QAS with respect to subcontractor monitoring.

- We determined the Laboratory has adequate procedures to verify the integrity of contractor data. Specifically, the Laboratory performs in-house reviews of the data from the subcontractor laboratory for each sample analyzed. For the offender samples, the Laboratory randomly re-analyzes samples, technically reviews all data, has 5 percent quality-control samples tested, and performs site visits at the subcontractor laboratory. Based on our audit, we found that the Laboratory has procedures in place that are consistent with the QAS to ensure the integrity of outsourced DNA analysis.
- We reviewed documentation that the Laboratory has conducted on-site reviews of the subcontractor laboratory. The subcontractor laboratory was found to be sufficient to perform quality DNA analysis.

Conclusion

Based on our review of internal and external reviews as well as Laboratory and sample security, our audit did not reveal any deficiencies in the Laboratory's compliance with the FBI's QAS. We made no recommendations concerning our review of Quality Assurance Standards.

III. Suitability of Forensic DNA Profiles in CODIS Databases

We reviewed 84 DNA profiles in the Laboratory's forensic CODIS database and determined that all were complete and accurate. During our review, we found one profile was not allowable for inclusion in NDIS because there was not enough information in the case file to determine the source of the profile and other essential information. As a result, prior to the issuance of this report, Laboratory officials removed this profile from the forensic index.

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.⁹ 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.¹⁰ 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.

⁹ 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.

¹⁰ A "locus" is a specific location on a chromosome. The plural form of locus is loci.

Results of the OIG Audit

We selected a sample of 84 profiles out of the 336 forensic profiles the Laboratory had uploaded to NDIS as of September 29, 2010. Of the 84 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.

OIG Sample Number CA-07

According to the NDIS requirements, a forensic sample must be related to a crime. During our review, we identified one profile that was generated from a sample of blood found in a parking lot in the Badlands National Park and was submitted to the Laboratory to determine if it was human blood. Laboratory officials determined that the sample was human blood but because there was no evidence that it was from a crime scene, the profile is unallowable for inclusion in the Forensic Index at NDIS. After we discussed this with Laboratory management, Laboratory officials agreed with our finding and removed the profile from the Forensic Index. Therefore, we make no recommendation for additional corrective action.

Conclusion

After reviewing the case files for each of the 84 profiles in our sample, we found all sampled profiles to be accurate and complete. We found one profile that was not allowable for inclusion in the NDIS database. Laboratory officials agreed with our conclusion and removed the profile from the Forensic Index at NDIS. 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 2008 through September 2010. The objectives of the 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.o accomplish the objectives of the audit, we:

- Examined internal and 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.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

¹² The QAS require that laboratories undergo annual audits, which every other year, must be performed by an external agency that performs DNA identification analysis and is independent of the laboratory being reviewed. The QAS does not require these audits to be performed in accordance with the *Government Auditing Standards* (GAS) and they are not performed by the Department of Justice Office of the Inspector General. Therefore, we refer to the QAS audits as either internal or external laboratory reviews, as applicable, to avoid confusion with our audits that are conducted in accordance with GAS.

be performed by personnel who have successfully completed the FBI's training course for conducting such reviews.

As permitted by GAS 7.42 (2007 revision), we generally relied on the results of the Laboratory's external laboratory review 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 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 associated with the four requests for the deletion of a DNA profile the Laboratory had received between July 1, 2003, and November 5, 2010, to determine if employees followed the Laboratory's policy for expunging DNA profiles from NDIS.
- Reviewed supporting documentation for 5 of 47 NDIS matches to determine whether they were resolved in a timely manner. The Laboratory provided the universe of NDIS matches as of November 2,

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.

2010. The sample was judgmentally selected to include case-to-case matches. There were no case-to-offender matches. This non-statistical sample does not allow projection of the test results to all matches.

- 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.
- Working in conjunction with the contractor used by the FBI to maintain NDIS and the CODIS software, we obtained an electronic file identifying the 336 (STR) forensic profiles the Laboratory had uploaded to NDIS as of September 29, 2010. We limited our review to a sample of 84 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, 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 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 requirements.

- DNA Data Acceptance Standards
- DNA Data Accepted at NDIS
- Quality Assurance Standards (QAS) Reviews
- NDIS DNA Autosearches
- 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
- The FBI Flowchart: A Guide to Determining What is Allowable in the Forensic Index at NDIS¹⁴

¹⁴ The FBI Flowchart is guidance issued to NDIS-participating laboratories separate from the MOU and NDIS operational procedures. The flowchart is contained in the 2010 CODIS Administrator's Handbook and has been provided to laboratories in referendums such as CODIS conferences.

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 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 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 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.

APPENDIX III

SOUTH DAKOTA FORENSIC LABORATORY RESPONSE

STATE OF SOUTH DAKOTA
DCI FORENSIC LABORATORY
OFFICE OF ATTORNEY GENERAL
1302 E. Hwy 14, Ste. 6
PIERRE, SOUTH DAKOTA 57501-8506
PHONE (605) 773-3673
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MARTY J. JACKLEY
ATTORNEY GENERAL

Division of Criminal Investigation
Law Enforcement Training

February 22, 2011

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

Dear Mr. Sheeren:

I have reviewed the OIG draft audit report covering the period from October 2008 through September 2010 conducted at the South Dakota State Forensic Laboratory.

Based on my review of the document, the laboratory was found to be in compliance with the NDIS participation requirements and the Quality Assurance Standards (both Forensic and Offender).

The review of the suitability of Forensic DNA profiles in CODIS revealed 1 (one) sample that was unallowable and thus was removed from NDIS.

I agree with the draft audit report as written and extend my appreciation to the OIG for their efforts in the audit process.

Sincerely,

/s/

Frans A. Maritz
Laboratory Director

cc: Paula Pagano, FBI

APPENDIX IV

FEDERAL BUREAU OF INVESTIGATION RESPONSE

U.S. Department of Justice

Federal Bureau of Investigation

Washington, D. C. 20535-0001

February 10, 2011

Mr. 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 report of the audit conducted at the South Dakota Forensic Laboratory, Pierre, South 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. Luttman, Chief of the CODIS Unit, at (703) 632-8315.

Sincerely,

/s/

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