



**AUDIT OF COMPLIANCE WITH STANDARDS  
GOVERNING COMBINED DNA INDEX SYSTEM  
ACTIVITIES AT THE TARRANT COUNTY MEDICAL  
EXAMINER'S OFFICE TARRANT COUNTY, TEXAS**

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

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# **AUDIT OF COMPLIANCE WITH STANDARDS GOVERNING COMBINED DNA INDEX SYSTEM ACTIVITIES AT THE TARRANT COUNTY MEDICAL EXAMINER'S OFFICE TARRANT COUNTY, TEXAS**

## **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 Tarrant County Medical Examiner's Office 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.<sup>1</sup> 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

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

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

## **OIG Audit Objectives**

Our audit generally covered the period from June 2009 through May 2011. The objectives of our audit were to determine if: (1) the Tarrant County Medical Examiner's Office 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 was in compliance with the NDIS participation requirements we tested. We found that CODIS access is properly safeguarded, Laboratory personnel requirements are being fulfilled, policies and procedures related to NDIS are available and followed by Laboratory staff, and the retention of personnel records are kept indefinitely.
- We found that the Laboratory was in compliance with the QAS we tested. We concluded that the Laboratory's policies and procedures related to sample security, sample processing, and sample retention were in compliance with the QAS. In addition, we looked at the Laboratory's annual reviews from the past 2 years. These reviews contained no findings.
- The Laboratory's 100 forensic DNA profiles that we reviewed were complete and accurate. Seven profiles were deleted by the Laboratory prior to our review as the Laboratory determined they did not meet the NDIS requirements for inclusion. The Laboratory deleted two additional profiles as a result of our review. The remaining 91 profiles we reviewed were 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. In addition, we

requested a written response to a draft of our audit report from the FBI and the Laboratory.

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# INTRODUCTION

The Department of Justice Office of the Inspector General (OIG), Audit Division, has completed an audit of compliance with standards governing Combined DNA Index System (CODIS) activities at the Tarrant County Medical Examiner's Office Laboratory (Laboratory).

## Background

The Federal Bureau of Investigation's (FBI) CODIS provides an investigative tool to federal, state, and local crime laboratories in the United States using forensic science and computer technology. The CODIS program allows these laboratories to compare and match DNA profiles electronically, thereby assisting law enforcement in solving crimes and identifying missing or unidentified persons.<sup>1</sup> 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 June 2009 through May 2011. The objectives of our audit were to determine if: (1) the Tarrant County Medical Examiner's Office 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

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subsequent amendments, has been codified in a federal statute (Statute) providing the legal authority to establish and maintain NDIS.<sup>2</sup>  
*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.

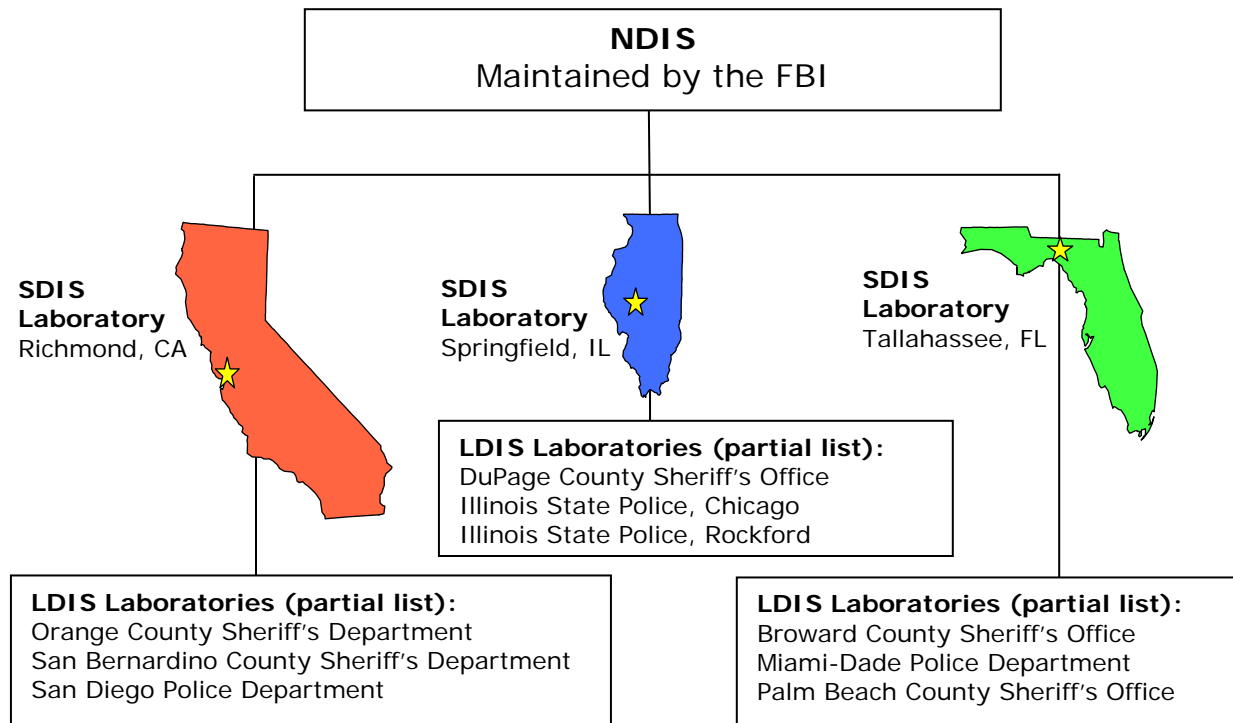
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<sup>2</sup> 42 U.S.C.A. § 14132 (2006).

## 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 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.<sup>3</sup>
- 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.<sup>4</sup>
- Detainee Index contains profiles from non-U.S. persons detained under the authority of the United States and required by law to provide a DNA sample for analysis and entry into NDIS.
- Forensic Index profiles originate from, and are associated with, evidence found at crime scenes.
- Missing Person Index contains known DNA profiles of missing persons and deduced missing persons.
- Unidentified Human (Remains) Index holds profiles from unidentified living individuals and the remains of unidentified deceased individuals.<sup>5</sup>

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<sup>3</sup> 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.

<sup>4</sup> 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.

<sup>5</sup> 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.

- 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.

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

### *State and Local DNA Index Systems*

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

States are authorized to upload DNA profiles to NDIS based on local, state, and federal laws, as well as NDIS regulations. However, states or localities may maintain NDIS-restricted profiles in SDIS or LDIS. For instance, a local law may allow for the collection and maintenance of a

victim profile at LDIS but NDIS regulations do not authorize the upload of that profile to the national level.

CODIS becomes more useful as the quantity of DNA profiles in the system increases because the potential for additional leads rises. However, the utility of CODIS relies upon the completeness, accuracy, and quality of profiles that laboratories upload to the system. Incomplete CODIS profiles are those for which the required number of core loci were not tested or do not contain all of the DNA information that resulted from a DNA analysis and may not be searched at NDIS.<sup>6</sup> The probability of a false match among DNA profiles is reduced as the completeness of a profile increases. Inaccurate profiles, which contain incorrect DNA information or an incorrect specimen number, may generate false positive leads, false negative comparisons, or lead to the misidentification of a sample. Further, laws and regulations exclude certain types of profiles from being uploaded to CODIS to prevent violations to an individual's privacy and foster the public's confidence in CODIS. Therefore, it is the responsibility of the Laboratory to ensure that it is adhering to the NDIS participation requirements and the profiles uploaded to CODIS are complete, accurate, and allowable for inclusion in NDIS.

### **Laboratory Information**

The Laboratory is a Local DNA Index System (LDIS) Laboratory in the state of Texas. The Medical Examiner's Office has jurisdiction over Tarrant, Parker, Denton, and Johnson counties with a combined population exceeding 2 million people. In addition, the Laboratory is a fee-for-service Laboratory serving close to 100 agencies in 30 counties in Texas and throughout the United States. The Laboratory began using CODIS in 1996 and DNA in the processing of criminal case evidence in 2000. The Laboratory analyzes only forensic DNA samples and does not outsource the analysis of forensic profiles. The Laboratory is accredited by the American Society of Crime Laboratory Directors/Laboratory Accreditation Board and was first accredited in June 1999. The Laboratory's next accreditation renewal is due in June 2014.

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

## **FINDINGS AND RECOMMENDATIONS**

### **I. Compliance with NDIS Participation Requirements**

The results of our testing of compliance with NDIS Standards did not identify any instances of noncompliance 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 CODIS access is properly safeguarded, Laboratory personnel requirements are being fulfilled, and policies and procedures related to NDIS are available and followed by Laboratory staff. These results are described in more detail below.

- NDIS requires that CODIS be physically and electronically safeguarded from unauthorized use and only accessible to limited approved personnel. Because of space limitations, the Laboratory's one CODIS workstation and server are in a separate building from the DNA Laboratory although the buildings are nearby on the same campus. The building housing the workstation has 24-hour monitored camera security and a receptionist who admits and logs in visitors during normal business hours. Outside business hours, employees use an access card and a code for entry. Visitors are escorted at all times within this building. The workstation is located in the Trace Analysis Laboratory which is locked at all times and only CODIS users are allowed to use this workstation. All users have their own CODIS user account and password, and the computer screen locks after 10 minutes of inactivity. The CODIS Administrator makes backups weekly and a monthly backup that is transferred to a secure off-site location.

- 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 two 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.
- CODIS users are required to complete annually 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 requires that participating Laboratories maintain personnel files for CODIS users, including proficiency testing, training, and other reports in accordance with requirements of Federal/State/Local law, policy, and/or standards established by the applicable accrediting organization. According to Laboratory policy and officials, personnel records on Laboratory personnel concerning proficiency testing, qualifications, training, and skills are kept indefinitely. As a result, we determined the Laboratory is conforming with this NDIS requirement.
- 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.

## **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, personnel records, or NDIS matches. We made no recommendations concerning our review of NDIS participation requirements.

## II. Compliance with Quality Assurance Standards

We reviewed the Laboratory's compliance with the FBI's quality assurance standards (QAS) by examining the two most recent annual reviews, and the Laboratory's policies and procedures for sample processing, sample security, and sample retention.<sup>7</sup> We did not identify any instances of non-compliance with these standards.

During our audit, we considered the Forensic QAS issued by the FBI. 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.<sup>8</sup> 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. Specifically, we found the Laboratory is reviewed annually, has sufficient 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 at least every 2 years. We determined that the Laboratory complied with this requirement by undergoing an external review for each of the past 2 years.
- We obtained the two most recent external annual reviews for the Laboratory. We determined that for both reviews, the required FBI audit document was used. There were no instances of noncompliance in either review so no corrective action was required. We also determined that all reviewers had completed the FBI's required QAS training.

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

<sup>8</sup> 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.

- For us to rely on the external review reports, we requested that external reviewers confirm they were independent at the time of the review. We received completed reviewer independence statements from the reviewers participating in the external reviews.
- We verified that the entrances to the building that house the Laboratory are properly secured and the Laboratory itself is controlled with a key-coded door and entrance cards for the Laboratory analysts. These cards and key pad combinations are documented by the Laboratory's Director. The building housing the CODIS server and workstation has 24-hour security and a receptionist who admits and logs in visitors. In both buildings visitors are escorted at all times. Overall security at the buildings housing the Laboratory and the CODIS server and workstation appear to be 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. Specifically, the Evidence Custodian uses an information management system to track evidence. Each item of evidence is given a unique case number and a description of the specimen. To ensure accuracy of data loaded into the database, the Laboratory technically reviews all case files and completes a checklist for each sample prior to uploading it to CODIS.
- The QAS requires laboratories to perform evidence examination, DNA extraction, and polymerase chain reaction (PCR) setup at separate times or in separate spaces. In addition, the QAS requires that these processes do not occur in the same room as amplification. We determined that the Laboratory conformed to these requirements.
- The Laboratory properly stores forensic samples in secure areas and retains the samples indefinitely. Specific to forensic samples, prior to processing an analyst takes cuttings. These cuttings are kept indefinitely and the evidence from which the samples are taken is returned to the submitting agency.

## **Conclusion**

Based on our analysis of the Laboratory's most recent two QAS, reviews as well as Laboratory practices for sample security, we conclude that the Laboratory is in compliance with the FBI's QAS we tested. We made no recommendations concerning our review of Quality Assurance Standards.

### **III. Suitability of Forensic DNA Profiles in CODIS Databases**

We reviewed 100 DNA profiles in the Laboratory's forensic CODIS database and determined that all were complete and accurate. The Laboratory had removed seven profiles from NDIS before our audit began and we determined that an additional two profiles should be deleted from NDIS.

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

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

#### **Results of the OIG Audit**

We selected a sample of 100 profiles out of the 1,220 forensic profiles the Laboratory had uploaded to NDIS as of May 18, 2011. The Laboratory determined that seven of these profiles were unallowable for inclusion in NDIS and removed them before our audit field work began. We agreed with the Laboratory's determinations. Of the remaining 93 profiles, we determined an additional 2 were unallowable for upload to NDIS. The remaining 91 profiles sampled were complete, accurate, and allowable for inclusion in NDIS. The specific exceptions are explained in more detail below.



## Unallowable Profiles

Our review resulted in the identification of two unallowable profiles. The Laboratory had deleted seven other unallowable profiles before our audit began.

In December 2006, the FBI issued a flowchart with eight general principles to assist DNA analysts in determining if a profile is eligible for upload to NDIS. The unallowable profiles were attributed to the following three general principles.

FBI General Principle number 2 requires that a profile must be derived from evidence from a crime scene. General Principle number 4 states that a profile must be attributable to a putative perpetrator. General Principle number 8 states that if a suspect's profile can reasonably be expected to be on an item that is at the crime scene or is part of the crime scene independent of the crime, then it is probably not a Forensic Unknown. This would generally be considered a Suspect profile and is therefore not allowable at NDIS.

The following table describes the nine unallowable profiles that the Laboratory either deleted before our audit began or while we were reviewing the profiles and the reasons they were unallowable in NDIS.

### Nine Unallowable Profiles Deleted from NDIS

<i>Sample Number</i>	<i>FBI General Principle Number 2 (Crime Scene Evidence)</i>	<i>FBI General Principle Number 4 (Putative Perpetrator)</i>	<i>FBI General Principle Number 8 (Suspect)</i>
CA-06			X
CA-19	X		
CA-24			X
CA-25			X
CA-46		X	
CA-72		X	
CA-90		X	
CA-97			X
CA-99			X

Source: OIG Analysis

Each of these profiles was uploaded to NDIS prior to the FBI's General Principles becoming available for distribution to laboratories. Laboratory

personnel provided documentation that the unallowable profiles had been deleted from NDIS. The profiles are described in more detail below.

*Sample Number CA-06*

This profile was from a homicide case and the specimen was a blood stain from the suspect's T-shirt. However, the T-shirt was found in the trunk of the defendant's car and the profile matched the known profile of the suspect. The Laboratory deleted this profile before our field work because the specimen was from the suspect's own shirt and his DNA could be expected to be there. We agreed with the Laboratory's decision to delete this profile.

*Sample Number CA-19*

The crime was the sexual assault of a minor. The specimen came from an envelope that had been sent to the victim prior to the assault by the suspect and matched the suspect's profile. This profile was not allowable because it was not part of the crime scene. The Laboratory deleted this profile during our fieldwork.

*Sample Number CA-24*

This was a homicide case and the specimen was a swab taken from the hand of the suspect and matched the suspect's known profile. The Laboratory deleted this profile before our field work because it came from the suspect's body. We agreed with the Laboratory that this profile should be deleted.

*Sample Number CA-25*

The profile was developed from scrapings from a bandana. The case file information revealed that a witness stated he/she saw the suspect wearing the bandana during an aggravated robbery. However, the bandana was given to authorities by a friend of the suspect several days later. The profile matched the suspect. The profile is unallowable because it was not taken from the crime scene and could have contained the suspect's DNA independent from the crime. The Laboratory deleted the profile during our fieldwork.

*Sample Number CA-46*

This crime was the burglary of a vehicle. The specimen came from a soda can found near where the vehicle was recovered. Officials at the

Laboratory tried to contact the investigator on the case to identify more information and more closely tie the can to the crime scene and putative perpetrator, but investigators could not give additional information and were no longer pursuing the case. The Laboratory deleted this profile from NDIS before our field work because it could not determine whether the can came from the crime scene and the information in the case file was not sufficient to attribute the profile to the putative perpetrator.

*Sample Number CA-72*

This was the burglary of vending machines in an elementary school. The specimen came from a soda can found near the vending machines. However, there was not enough information in the case file to determine that the can was attributable to the putative perpetrator, and not a person unrelated to the crime. The Laboratory contacted the investigator, but the investigator could not provide additional information that was sufficient to maintain the profile at NDIS. As a result, the Laboratory deleted this profile prior to our field work.

*Sample Number CA-90*

The crime was the burglary of a building. The specimen came from a soft drink bottle near the crime scene. Officials at the Laboratory contacted the investigator who said he could not be certain the bottle was left by a perpetrator. The investigator said he was no longer pursuing the case. As a result, the Laboratory deleted the profile prior to our field work.

*Sample Number CA-97*

The specimen was a cutting taken from jeans of the suspect of a capital murder case. The jeans were taken from the suspect's residence, not the crime scene, and the profile developed from the sample matched the suspect's known profile. The Laboratory deleted this profile before our field work because the evidence was not taken from the crime scene and the suspect's DNA could have been on the jeans independent of the crime.

*Sample Number CA-99*

This case was an aggravated robbery. The profile was developed from scrapings from a cap that was retrieved from the suspect's vehicle several hours after the crime. According to the case file, a witness

saw the perpetrator wearing a cap with the same description during the crime. The profile developed from the DNA found on the cap matched that of the suspect. The Laboratory deleted this profile before our field work because the suspect's DNA could be expected to be on his own cap and the cap was not taken from the crime scene.

## **Conclusion**

For the 100 forensic profiles we tested, the Laboratory had deleted 7 from NDIS before our audit began. We agreed with the Laboratory's determinations for these profiles. During our audit field work, in discussion with Laboratory officials, we identified two additional profiles that the Laboratory agreed to delete. The remaining 91 profiles were complete, accurate, and allowable for inclusion in NDIS. In addition, all of the unallowable profiles were uploaded prior to additional guidance the FBI released in December 2006. As a result, we made no recommendations concerning our review of Forensic DNA profiles.

## APPENDIX I

### 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 June 2009 through May, 2011. The objectives of the 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. To accomplish the objectives of the audit, we:

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

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

As permitted by Government Auditing Standards 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.<sup>9</sup> In order to rely on the work of non-auditors, Government Auditing Standards require 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 reviews.

- 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 5 of 43 NDIS matches to determine whether they were resolved in a timely manner. The Laboratory provided the universe of 43 NDIS matches as of May 31, 2011. The sample was judgmentally selected to include both case-to-case and case-to-offender matches. This non-statistical sample does not allow projection of the test results to all matches.

Reviewed the case files for selected forensic DNA profiles to determine if the profiles were developed in accordance with the Forensic QAS and were complete, accurate, and allowable for inclusion in NDIS.

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<sup>9</sup> Further, as noted in Appendix II, we performed audit testing to verify Laboratory compliance with specific QAS that have a substantial effect on the integrity of the DNA profiles uploaded to 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 1,220 (STR) forensic profiles the Laboratory had uploaded to NDIS as of May 18, 2011. 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, 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 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
- QAS Reviews
- 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 NDIS<sup>10</sup>

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<sup>10</sup> 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 forums such as CODIS conferences.



## Quality Assurance Standards

The FBI issued two sets of 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 the database and known samples.
- Analytical Procedures (Forensic QAS and Offender QAS 9.5): The laboratory shall monitor the analytical procedures using [appropriate] controls and standards.
- Review (Forensic QAS 12.1): The laboratory shall conduct administrative and technical reviews of all case files and reports to ensure conclusions and supporting data are reasonable and within the constraints of scientific knowledge.

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

- [Reviews] (Forensic QAS and Offender QAS 15.1 and 15.2): The laboratory shall be audited annually in accordance with [the QAS]. The

annual audits shall occur every calendar year and shall be at least 6 months and no more than 18 months apart.

At least once every 2 years, an external audit shall be conducted by an audit team comprised of qualified auditors from a second agency(ies) and having at least one team member who is or has been previously qualified in the laboratory's current DNA technologies and platform.

- Outsourcing (Forensic QAS and Offender QAS Standard 17.1): A vendor laboratory performing forensic and database DNA analysis shall comply with these Standards and the accreditation requirements of federal law.

Forensic QAS 17.4: An NDIS participating laboratory shall have and follow a procedure to verify the integrity of the DNA data received through the performance of the technical review of DNA data from a vendor laboratory.

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

## **Office of the Inspector General Standards**

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

- Completeness of DNA Profiles: A profile must include each value returned at each locus for which the analyst obtained results. Our rationale for this standard is that the probability of a false match among DNA profiles is reduced as the number of loci included in a profile increases. A false match would require the unnecessary use of laboratory resources to refute the match.
- Accuracy of DNA Profiles: The values at each locus of a profile must match those identified during analysis. Our rationale for this standard is that inaccurate profiles may: (1) preclude DNA profiles from being

matched and, therefore, the potential to link convicted offenders to a crime or to link previously unrelated crimes to each other may be lost; or (2) result in a false match that would require the unnecessary use of laboratory resources to refute the match.

- **Timely Notification of Law Enforcement When DNA Profile Matches Occur in NDIS:** Laboratories should notify law enforcement personnel of NDIS matches within 2 weeks of the match confirmation date, unless there are extenuating circumstances. Our rationale for this standard is that untimely notification of law enforcement personnel may result in the suspected perpetrator committing additional, and possibly more egregious, crimes if the individual is not deceased or already incarcerated for the commission of other crimes.

FBI RESPONSE TO DRAFT REPORT



U.S. Department of Justice

Federal Bureau of Investigation

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Washington, D. C. 20535-0001

August 24, 2011

David M. Sheeren  
Regional Audit Manager  
Denver Regional Audit Office  
Office of the Inspector General  
21120 Lincoln Street, Suite 1500  
Denver, CO 80203

Dear Mr. Sheeren:

Your memorandum to Director Mueller forwarding the draft audit report for the Tarrant County Medical Examiner's Office, Fort Worth, Texas (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*. 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 Luttman, Chief of the CODIS Unit, at (703) 632-8315.

Sincerely,

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

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

TARRANT COUNTY RESPONSE TO DRAFT REPORT



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July 27, 2011

Thank you so much for your letter of July 25, 2011, and the timely production of the draft 2011 OIG audit report.

In response, I have one clarification and an update. The section "Laboratory Information" on page 6 indicates that the laboratory began using "...DNA in the processing of criminal case evidence in 2000." The year 2000 is the date during which the laboratory began using STR technology and uploading profiles to NDIS.

In order to improve the efficiency of our processes in determining the source of submitted evidence and its relation to a crime scene, we have developed a questionnaire concerning evidentiary items for submitting agencies. The form will be put into use in the laboratory in the near future.

It was a pleasure to work with you during the time of the audit, and thank you for the opportunity to participate in this important review process. If there is any additional information that you require, please let me know.

Regards,

Dr. Susan Howe  
Crime Laboratory Director

## APPENDIX V

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

The OIG provided a draft of this audit report to both the Tarrant County Medical Examiner's Office Laboratory and the FBI. The Tarrant County Medical Examiner's Office Laboratory's response is incorporated in Appendix III of this final report. The FBI's response is incorporated in Appendix IV of this report. The following provides the OIG analysis of the responses and summary of actions taken to close the report.

#### **Summary of Actions Taken to Close the Report:**

Based upon our review, the Office of the Inspector General made no recommendations to the Tarrant County Medical Examiner's Office Laboratory.