AUDIT OF COMPLIANCE WITH STANDARDS GOVERNING COMBINED DNA INDEX SYSTEM ACTIVITIES AT THE WASHINGTON STATE PATROL MARYSVILLE CRIME LABORATORY TULALIP, WASHINGTON

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

Audit Report GR-90-13-003
March 2013

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EXECUTIVE SUMMARY

The Department of Justice Office of the Inspector General (OIG), Audit Division, has completed an audit of compliance with standards governing Combined DNA Index System (CODIS) activities at the Washington State Patrol Marysville Crime Laboratory (Laboratory) in Tulalip, Washington.

Background

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

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

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

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

OIG Audit Objectives

Our audit generally covered the period from December 2009 through January 2012. The objectives of our audit were to determine if the: (1) Laboratory was in compliance with the NDIS participation requirements; (2) Laboratory was in compliance with the Quality Assurance Standards (QAS) issued by the FBI; and (3) Laboratory's forensic DNA profiles in CODIS databases were complete, accurate, and allowable for inclusion in NDIS.

Our review determined the following:

- The Laboratory was in compliance with the NDIS participation requirements we tested, including: (1) current NDIS eligibility training for Laboratory personnel; (2) availability and accessibility of NDIS procedures for CODIS users: and (3) adequate security for CODIS equipment that was located in a controlled laboratory space.

- The Laboratory was in compliance with the QAS we reviewed, including: (1) completion of periodic internal and external QAS reviews; (2) implementation of corrective actions presented by internal and external reviews; and (3) had procedures in place to help ensure that access to the Laboratory was controlled and limited to authorized personnel. Finally, at the time of our audit, the Laboratory was conducting technical review of the analysis of its forensic DNA samples outsourced to another laboratory.

- We reviewed 100 of the Laboratory's 461 forensic profiles that have been uploaded to NDIS as of January 19, 2012. Of the 100 forensic profiles sampled, we found that 99 profiles were complete, accurate, and allowable. We identified one unallowable profile that was not taken from the crime scene. The Laboratory agreed to delete the unallowable profile and one more unallowable profile that was not in our original sample, but was also uploaded in association with the case file of the unallowable profile in our sample. In total, the Laboratory removed two unallowable profiles from NDIS.

The results of our audit are discussed in detail in the Findings section of the report. We describe our audit objectives, scope, and methodology in Appendix I and audit criteria 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 from the Laboratory and the FBI written responses to a draft copy of our audit report. We received those responses and they are found in Appendices III and IV, respectively. Based on our report that contained no recommendations and the responses that we received, we issue this final report closed.

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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 December 2009 through January 2012. The objectives of our audit were to determine if the: (1) Laboratory was in compliance with the National DNA Index System (NDIS) participation requirements; (2) Laboratory was in compliance with the Quality Assurance Standards (QAS) issued by the FBI; and (3) Laboratory's forensic DNA profiles in CODIS databases were complete, accurate, and allowable for inclusion in NDIS. Appendix I contains a detailed description of our audit objectives, scope, and methodology; and Appendix II contains the criteria used to conduct the audit.

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

Legal Foundation for CODIS

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

Allowable DNA Profiles

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

Allowable Disclosure of DNA Profiles

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

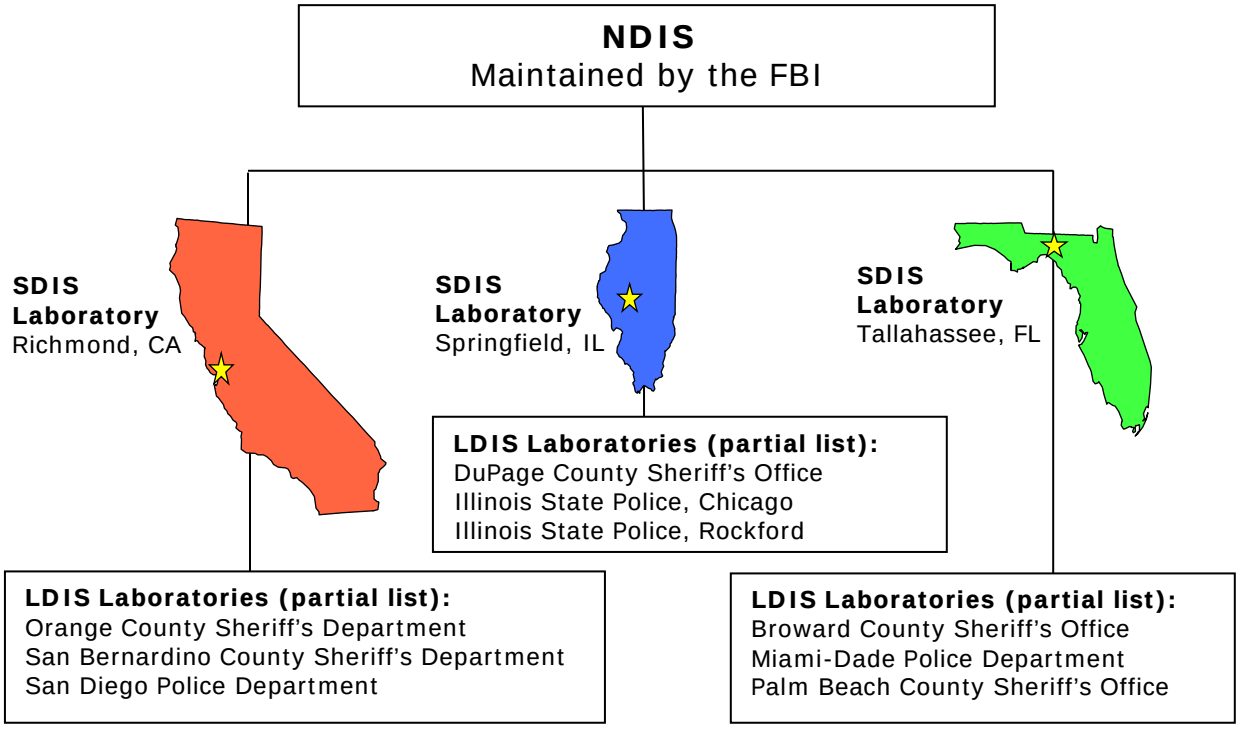
CODIS Structure

The FBI implemented CODIS as a distributed database with hierarchical levels that enables federal, state, and local crime laboratories to compare DNA profiles electronically. CODIS consists of a hierarchy of three distinct levels: (1) NDIS, managed by the FBI as the nation's DNA database containing DNA profiles uploaded by participating states; (2) the State DNA Index System (SDIS) which serves as a state's DNA database containing

[2] 42 U.S.C.A. § 14132 (2006).

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

Example of System Hierarchy within CODIS



National DNA Index System

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

- Convicted Offender Index contains profiles generated from persons convicted of qualifying offenses.[3]

- Arrestee Index is comprised of profiles developed from persons who have been arrested, indicted, or charged in an information with a crime.

- Legal Index consists of profiles that are produced from DNA samples collected from persons under other applicable legal authorities.[4]

- Detainee Index contains profiles from non-U.S. persons detained under the authority of the 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

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

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

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

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 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 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

According to Laboratory officials, the Laboratory serves about 75 agencies including; the Marysville Police Department, Washington State Fish and Wildlife, Washington State Parks, and the Swinomish Gaming Commission. In total, the Laboratory serves a population size of 1.3 million people from 8 surrounding counties (Chelan, Clallam, Island, Jefferson, San Juan, Skagit, Snohomish, and Whatcom counties). The Laboratory participates in the CODIS program as a LDIS Laboratory and maintains a Forensic database. The Laboratory began analyzing DNA using Short Tandem Repeat (STR) in 2001, and began processing evidence in criminal cases and uploading forensic profiles into NDIS in 2003.

The Laboratory was last accredited for 5 years by the American Society of Crime Laboratory Directors/Laboratory Accreditation Board (ASCLD/LAB) in July 2010. Thus, the Laboratory is up for renewal in July 2015.

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

FINDINGS

I. Compliance with NDIS Participation Requirements

The Laboratory was in compliance with NDIS participation requirements regarding training, match confirmations, physical security over its CODIS server, and back-ups. Specifically, we found that Laboratory personnel completed the required NDIS eligibility training. Also, the Laboratory confirmed NDIS matches in a timely manner. The Laboratory's CODIS server was physically secure and access to it and CODIS was limited to authorized personnel only. In addition, we found the Laboratory backed up the CODIS server in accordance with NDIS requirements.

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

Results of the OIG Audit

We found that the Laboratory complied with the NDIS participation requirements we reviewed. Specifically, we found that the Laboratory was in compliance with NDIS participation requirements regarding updated NDIS eligibility training for its personnel, timeliness of NDIS matches, securing the CODIS server and limiting access to authorized personnel only, and backing up its CODIS server in accordance with NDIS requirements. These results are described in more detail below.

- The NDIS Laboratories Operational Procedures manual in effect during our audit required that participating laboratories ensure that CODIS users are provided copies of, understand and abide by the Memorandum of Understanding for Participation in NDIS, the NDIS operational procedures, and supporting documentation issued by the FBI. The Laboratory's CODIS Administrator stated that the Memorandum of Understanding for Participation in NDIS, the NDIS operational procedures, and the FBI's eligibility flowchart are available for anyone to look at on the FBI's Criminal Justice

Information System—Wide Area Network (CJIS-WAN). All Laboratory forensic personnel have access to these documents on the CJIS-WAN. Finally, we interviewed three of the eight CODIS users who stated that they were aware of the NDIS procedures and that they knew how to access the procedures on the CJIS-WAN.

- Laboratory's CODIS users are required to complete annual DNA records acceptance training. The FBI provided a list of Laboratory personnel who had received this mandatory annual training, which we compared to a similar list of personnel provided by the Laboratory. We found that all authorized personnel required to complete the training had successfully completed the annual training in 2012.

- For each CODIS user, the FBI requires that a participating laboratory submit fingerprint cards, background information, CODIS user information, and other appropriate documentation to the FBI. We verified that all necessary documents were provided to the FBI for all 8 CODIS users, including 3 Information Technology (IT) CODIS users.

- The NDIS Confirmation and Hit Dispositioning Operational Procedures describe what participating laboratories must do to confirm matches that are identified in the CODIS system. We reviewed a sample of five NDIS matches and determined:

  - The Laboratory sent confirmation requests in a timely manner for all five matches;

  - Confirmation generally took place within 30 days after the originating laboratory's request was sent out for four of the five matches. For the one late match confirmation, the process took 55 days because another laboratory did not confirm the match request submitted by the Laboratory in a timely manner; and

  - The Laboratory notified investigators of match confirmation within 2 weeks for four out of the five matches. For the one late notification, the Laboratory notified the investigator 7 days late, which we do not take issue with.

- The NDIS Security Requirements state that the CODIS server shall be physically safeguarded from unauthorized use and be only accessible to a limited number of approved personnel. We found that only authorized Laboratory personnel had key card access to

the forensic Laboratory where the CODIS terminals and server are located. Moreover, the Laboratory's in-house policy limits access to the CODIS database to only CODIS users, which have their own CODIS accounts, unique passwords, and must undergo annual CODIS training. We confirmed that only CODIS users within the Laboratory had access to CODIS with one exception. We found that a Systems Administrator user account that was no longer being used was still active in CODIS. According to laboratory personnel, the Systems Administrator user account was utilized only during the Laboratory's initial CODIS program set-up and the account was never deactivated. After we brought this to the Laboratory's attention, the CODIS Administrator deactivated the Systems Administrator user account and provided us a report with the Systems Administrator user account stop date. The FBI also confirmed that the Systems Administrator user account was not in NDIS and had no capabilities to add or alter any information in NDIS. Based on this evidence and the Laboratory's corrective actions, we do not consider this to be a finding regarding the Laboratory's effort to adhere to the NDIS Security Requirements.

- The Laboratory's in-house policy requires that on a daily basis its CODIS server be automatically backed up to another server at an off-site location in Olympia, Washington, which is the headquarters location of the Washington State Police. Also, another automatic weekly back up of the CODIS server is required to be made onto an external hard drive, which is located at the Laboratory. On a weekly basis, the server in Olympia, Washington, which contains the Laboratory's daily back-ups, is further backed up to a Storage Area Network library, which is also located in Olympia, Washington. We confirmed that back-up software was installed on the CODIS terminal and we physically verified the existence of the Laboratory's external hard drive, confirming that the Laboratory was following its in-house back-up policy.

- The NDIS Security Requirements state that only authorized personnel shall have physical access to the CODIS server, and that locating a CODIS terminal server in a common data center may be permitted as long as the data center is located within the criminal justice agency and is physically secure. We learned that the CODIS server has been stored in the forensic laboratory behind locked doors. Access to the CODIS terminal and the server is currently limited to CODIS users. We observed the location and accessibility of the CODIS server and found it to be in compliance with NDIS Security Requirements.

Conclusion

We found that the Laboratory was in compliance with NDIS participation requirements regarding updated NDIS eligibility training for Laboratory personnel, timeliness of NDIS matches, securing and limiting access to the CODIS server to authorized personnel only, and creating backups of its CODIS server in accordance with NDIS requirements. We made no recommendations concerning our review of the Laboratory's efforts to adhere to NDIS participation requirements.

II. Compliance with Quality Assurance Standards

We found that the Laboratory complied with the Quality Assurance Standards (QAS) issued by the FBI. Specifically, we found that the Laboratory: (1) followed protocols with regard to amplified samples being maintained in separate rooms from the evidence examination, DNA extraction, and polymerase chain reaction setup areas, (2) underwent Quality Assurance Standard reviews within designated timeframes, and (3) had procedures in place to help ensure that access to the Laboratory was controlled and limited to authorized personnel.

During our audit, we considered the Forensic 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 QAS issued by the FBI. Specifically, the Laboratory: (1) followed protocols with regard to amplified samples being maintained in separate rooms from the evidence examination, DNA extraction, and PCR setup areas; (2) underwent QAS reviews within designated timeframes; and (3) had procedures in place to help ensure that access to the Laboratory was controlled and limited to authorized personnel. These results are described in more detail below.

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

[8] The QAS require that laboratories undergo annual audits. Every other year, the QAS requires that the audit be performed by an external agency that performs DNA identification analysis and is independent of the laboratory being reviewed having at least one team member who is or has been an analyst previously qualified in the laboratory's current DNA technologies and platform and one team member who is currently or was previously a qualified analyst from a databasing laboratory. 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.

- The QAS requires amplified DNA to be maintained at separate times or in separate spaces from the evidence examination, DNA extraction, and polymerase chain reaction (PCR) setup processes. We observed that the Laboratory had separate areas for DNA examination and extraction, PCR setup, and DNA amplification. Known and unknown samples were separated by time and space during the PCR setup and all evidence flows one-way to avoid amplified DNA from being introduced into Pre-PCR areas of the laboratory. We observed that the doors in the post-PCR areas of the laboratory were closed and locked; the Laboratory's policy was to keep these doors closed and locked at all times. Based on our observations and review of the Laboratory's procedures, the Laboratory was in compliance with the QAS requirement that we tested.

- The Laboratory's policy for controlling and safeguarding evidence samples requires that all evidence will be kept in the evidence vault or in an alternative evidence storage location within the Laboratory and the Laboratory must be locked and secured during off-duty hours. We observed that the Laboratory's vault was secure and access to it was limited to authorized laboratory personnel only, which included the Laboratory Manager, Supervisors, Property and Evidence Custodians, and a DNA Analyst. The chain of custody over evidence was documented in the Laboratory's evidence retrieval system known as the Laboratory Information Management System (LIMS). LIMS maintained information on the location of each piece of evidence at all times. For example, a DNA analyst makes a request to the Property and Evidence Custodian to sign out evidence from the vault. The sign-out process includes the DNA analyst scanning a unique bar code and entering a secure personal identification number in order to document the chain of custody in LIMS. DNA Analysts are assigned locked refrigerators or storage spaces to secure the evidence while it is not in the DNA Analyst's immediate custody. Upon completion of DNA analysis, the DNA Analyst returns the evidence to the vault, where it is scanned and signed backed in by the Property and Evidence Custodian. Due to limited storage space at the Laboratory, all evidence is preserved by the Laboratory while DNA analysis is being conducted and returned to the submitting agency once the analysis is complete. Based on our observations, the Laboratory maintained integrity of its physical evidence in accordance with the QAS requirements that we tested.

- According to Laboratory officials, since 2007, the Laboratory has been conducting technical review of the analysis of forensic DNA samples analyzed by Orchid Cellmark, Inc.[9] The Orchid Cellmark laboratory was last accredited for 5 years by the American Society of Crime Laboratory Directors/Laboratory Accreditation Board (ASCLD/LAB) in September 2012. Thus, the Orchid Cellmark laboratory will be up for renewal in September 2017. We reviewed a copy of Orchid Cellmark's contract with the Laboratory and determined that the requirements were appropriately documented and approved in accordance with the QAS. The QAS required Orchid Cellmark to undergo an annual review, including an external review every 2 years. During our fieldwork in February 2012, we found that Orchid Cellmark had an external QAS review performed in May 2010 and an internal QAS review performed in September 2011, in accordance with the FBI's requirement. Both the internal and external reviews were conducted using the FBI's QAS Review Document and the external audit QAS reviewers signed the conflict of interest form as required by the QAS. The external review had no findings of non-compliance, while the internal review had one finding of non-compliance in which the vendor laboratory addressed and documented the correction. According to the QAS, an analyst or technical reviewer employed by an NDIS participating Laboratory shall perform a technical review of the vendor laboratory's DNA data before it is uploaded to CODIS or the search results are reported. We reviewed five outsourced cases to ensure the Laboratory was conducting technical reviews of all outsourced cases before uploading the DNA data to CODIS. As a result, we found in all five cases that Laboratory personnel conducted a technical review before uploading DNA data into CODIS.

- The QAS requires laboratories to undergo an annual review, including an external review every 2 years. During our fieldwork in February 2012, we found that the Laboratory had an external QAS review performed in October 2010 and an internal QAS review performed in October 2011, in accordance with the FBI's requirement.

- We reviewed the Laboratory's prior 2 years of QAS review reports. Both the internal and external reviews were conducted using the FBI's QAS Review Document. The FBI confirmed that at least one

[9] Law enforcement agencies in the State of Washington may submit evidence directly to Orchid Cellmark, Inc., through grant programs administered by the Washington Association of Sheriffs and Police Chiefs.

of the QAS reviewers for both reviews had successfully completed the FBI QAS Review training course.

  - The external QAS review conducted in October 2010, noted no findings for the Laboratory.

  - The internal QAS review conducted in October 2011, noted 8 findings for the Laboratory. We confirmed that the Laboratory has implemented corrective action for each of the 8 findings.

- We also verified that each of the QAS reviewers who conducted the most recent external QAS review completed the Auditor Self-Certification worksheet and indicated that there were no impairments to their independence.

- We reviewed the Laboratory's policies on physical security of the facility, as well as the keys and key card assignments to Laboratory personnel for access to the secured areas of the Laboratory. We observed during our tour, that one main door to the facility was unlocked during business hours and all other doors into the facility were locked and closed off to the public. The main door was unlocked to allow entry for visitors and deliveries and it led to a waiting area that was secure from any further access to the rest of the Laboratory. In order to gain access to other parts of the Laboratory, all visitors are required to press a call button, speak to a receptionist, and if allowed entry, sign a log-in sheet, obtain a badge, and they must be escorted by a staff member at all times while in the Laboratory. The doors leading into the interior parts of the Laboratory were secured with key pads and were limited only to authorized personnel. Authorized personnel have key pad access to enter and exit the Laboratory through a locked door adjacent to the main entrance. We found that overall external and internal security at the Laboratory was adequate and in compliance with the QAS requirements we tested.

Conclusion

We found that the Laboratory complied with the FBI's Forensic QAS that we tested. Specifically, we found that the Laboratory: (1) followed protocols with regard to amplified samples being maintained in separate rooms from the evidence examination, DNA extraction, and PCR setup areas; (2) underwent QAS reviews within designated timeframes; and (3) had procedures in place to help ensure that access to the Laboratory was controlled and limited to authorized personnel. We made no

recommendations concerning our review of the Laboratory's adherence to the QAS.

III. Suitability of Forensic DNA Profiles in CODIS Databases

We reviewed 100 of the Laboratory's 461 forensic profiles that had been uploaded to NDIS as of January 19, 2012. Of the 100 forensic profiles sampled, we found that 99 profiles were complete, accurate, and allowable. We identified one unallowable profile that was not taken from the crime scene. The Laboratory agreed to delete the unallowable profile and one more profile that was not in our original sample, but was also uploaded in association with the unallowable profile in our sample. In total, the Laboratory removed two unallowable profiles 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 461 forensic profiles that the Laboratory had uploaded into NDIS as of January 19, 2012. Of the 100 forensic profiles sampled, we found that 1 profile was unallowable for

upload to NDIS. The remaining profiles sampled were complete, accurate, and allowable for inclusion in NDIS. In addition to our sampled profiles, we found one more unallowable profile uploaded to NDIS that was associated with the unallowable profile. In total, the Laboratory removed two profiles from NDIS. The specific exceptions are explained in more detail below.

Sample Number WA-7

Sample WA-7 was taken from a stamp on a letter that was mailed to the home of a murder victim's father in Canada after the homicide had occurred in the United States. We deemed this profile to be unallowable because it was not taken from the crime scene. The CODIS Administrator deleted this profile because of the additional information the Laboratory obtained during our review that determined the profile to be unallowable. In addition, the CODIS Administrator discovered a second profile uploaded to CODIS that was also taken from the letter. The Laboratory deleted the additional profile. In total, two profiles were removed from NDIS.

Conclusion

Based on our testing of 100 sample forensic profiles that the Laboratory uploaded to NDIS, we found 99 profiles were complete, accurate, and allowable for inclusion in NDIS, but we questioned the Laboratory's upload of 1 forensic profile that did not meet the standards for NDIS. The Laboratory agreed and removed the unallowable profile. We also confirmed that the Laboratory removed an additional profile that was not part of our sample. However, it was related to the one exception that we identified in our sample and it too was deemed inappropriate for CODIS. Because the Laboratory took corrective action on the two profiles, we make no recommendations concerning the suitability of the Laboratory's forensic DNA profiles that are in CODIS.

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 December 2009 through January 2012. The objectives of the audit were to determine if the: (1) Laboratory was in compliance with the NDIS participation requirements; (2) Laboratory was in compliance with the Quality Assurance Standards (QAS) issued by the FBI; and (3) Laboratory's forensic DNA profiles in CODIS databases were complete, accurate, and allowable for inclusion in NDIS. To accomplish the objectives of the audit, we:

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

  In accordance with the QAS, the internal and external laboratory review procedures are to address, at a minimum, a laboratory's quality assurance program, organization and management, personnel qualifications, facilities, evidence control, validation of methods and procedures, analytical procedures, calibration and maintenance of instruments and equipment, proficiency testing of analysts, corrective action for discrepancies and errors, review of case files, reports, safety, and previous audits. The QAS require that internal and external reviews be performed by personnel who have successfully completed the FBI's training course for conducting such reviews. We obtained evidence from the FBI and the Laboratory concerning: (1) the qualifications of the internal and external reviewers, and (2) the independence of the external reviewers.

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

- Toured the Laboratory to observe facility security measures as well as the procedures and controls related to the receipt, processing, analyzing, and storage of forensic evidence and convicted offender DNA samples.

- Reviewed the Laboratory's written policies and procedures related to 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 22 NDIS matches to determine whether they were resolved in a timely manner. The Laboratory provided the universe of NDIS matches as of February 12, 2012. The sample was judgmentally selected to include both case-to-case and case-to-offender matches. This non-statistical sample does not allow projection of the test results to all matches.

- Reviewed 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 complete, accurate, and allowable for inclusion in NDIS.

  Working in conjunction with the contractor used by the FBI, we obtained an electronic file identifying the 461 (STR) forensic profiles the Laboratory had uploaded to NDIS as of January 19, 2012. We limited our review to a sample of 100 profiles. This sample size was determined judgmentally because preliminary audit work determined that risk was not unacceptably high.

- 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.

APPENDIX II

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.

- NDIS Laboratories Procedures
- Quality Assurance Standards Audit Procedure
- NDIS Confirmation and Hit Dispositioning Procedure
- NDIS DNA Records Procedure
- NDIS DNA Acceptance Standards
- NDIS Searches Procedure
- NDIS Security Requirements Procedure
- The FBI Flowchart: A Guide to Determining What is Allowable in the Forensic Index at NDIS[10]

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.

[10] 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 the CODIS conference.

For our audit, we generally relied on the reported results of the Laboratory's most recent annual external review to determine if the Laboratory was in compliance with the QAS. Additionally, we performed audit work to verify that the Laboratory was in compliance with the QAS listed below because they have a substantial effect on the integrity of the DNA profiles uploaded to NDIS.

- Facilities (Forensic QAS and Offender QAS 6.1): The laboratory shall have a facility that is designed to ensure the integrity of the analyses and the evidence.

- Evidence Control (Forensic QAS 7.1): The laboratory shall have and follow a documented evidence control system to ensure the integrity of physical evidence. Where possible, the laboratory shall retain or return a portion of the evidence sample or extract.

- Sample Control (Offender QAS 7.1): The laboratory shall have and follow a documented sample inventory control system to ensure the integrity of database and known samples.

- Analytical Procedures (Forensic QAS and Offender QAS 9.5): The laboratory shall monitor the analytical procedures using [appropriate] controls and standards.

- Review (Forensic QAS 12.1): The laboratory shall conduct administrative and technical reviews of all case files and reports to ensure conclusions and supporting data are reasonable and within the constraints of scientific knowledge.

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

- [Reviews] (Forensic QAS and Offender QAS 15.1): 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.

- [Reviews] (Forensic QAS and Offender QAS 15.2): 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.

APPENDIX III

AUDITEE RESPONSE[11]

FEB 19 2013

CHRISTINE O. GREGOIRE
Governor

JOHN R. BATISTE
Chief

STATE OF WASHINGTON
WASHINGTON STATE PATROL
2700 116th Street NE Suite P • Tulalip, Washington 98271-9425 • (360) 654-1201 • www.wsp.wa.gov

February 13, 2013

David J. Gaschke
U.S. Department of Justice
Office of the Inspector General
San Francisco Regional Audit Office
1200 Bayhill Drive, Suite 201
San Bruno, CA 94066

Dear Mr. Gaschke:

Thank you for the opportunity to review and provide comments on the draft audit report, "Audit of Compliance with Standards Governing Combined DNA Index System Activities at the Washington State Patrol Marysville Crime Laboratory." Our comments are as follows:

Page thirteen states, "According to Laboratory officials, since 2007, the Laboratory has been outsourcing the analysis of its forensic DNA samples to Orchid Cellmark, Inc."

This statement is not an accurate assessment of our relationship with Orchid Cellmark, Inc. The Washington State Patrol Crime Laboratory system does not outsource DNA testing. Law enforcement agencies in the State of Washington may submit some of their evidence directly to Orchid Cellmark, Inc. through grant programs administered by the Washington Association of Sheriffs and Police Chiefs (WASPC). The Washington State Patrol conducts technical review of DNA analyses from Orchid Cellmark, Inc. prior to entering any profiles from these outsourced cases into the database.

Additional information regarding the DNA profile designated WA-7 (and one more similar profile associated with this sample) was obtained by the laboratory during the audit, which led us to conclude that these two DNA profiles in CODIS were no longer attributable to a possible perpetrator. Further investigation conducted by law enforcement had determined that the evidence (letter) was separate from the homicide's crime scene and therefore not allowable in CODIS. These two profiles were subsequently removed from the database.

Please feel free to contact me or Ms. Kristina Hoffman at 360-654-1201 if you need any further information or clarification regarding the comments offered in our response.

Sincerely,

Gene P. Lawrence, Manager
Marysville Crime Laboratory

GPL:gpl

[11] The Laboratory provided information in its response that we incorporated into the report. The additional information provided by the Laboratory did not change our audit results.

APPENDIX IV

DEPARTMENT OF JUSTICE RESPONSE

U.S. Department of Justice

Federal Bureau of Investigation

Washington, D.C. 20535-0001

February 20, 2013

David J. Gaschke
Regional Audit Manager
San Francisco Regional Audit Office
Office of the Inspector General
1200 Bayhill Drive, Suite 201
San Bruno, CA 94066

Dear Mr. Gaschke:

Your memorandum to Director Mueller forwarding the draft audit report for the Washington State Patrol, Marysville Crime Laboratory, Tulalip, Washington (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 C. Wendel, Chief of the CODIS Unit, at (703) 632-8315.

Sincerely,

Alice R. Isenberg

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