AN INDEPENDENT REVIEW OF THE SBI FORENSIC LABORATORY

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EXECUTIVE SUMMARY

This is the final report of the results of an independent review of the activities and performance of the Forensic Biology Section[1] of the State Bureau of Investigation (SBI) Crime Laboratory commissioned by the North Carolina Attorney General that began in March, 2010. The review focuses on the policies, procedures and practices of this Section of the laboratory between January, 1987 and January, 2003, when the forensic tests examined in this review were discontinued. This report includes specific findings and recommendations for further action, as well as a discussion of the review process and the rationale which supports the conclusions presented. The basis for this review and relevant facts are summarized below.

In the wake of the highly publicized decision of the North Carolina Innocence Commission Three- Judge Panel to exonerate Gregory Taylor and free him from his life sentence based on a 1993 conviction for the first degree homicide of Jaquetta Thomas, Chris Swecker Esq. and Michael Wolf[2] were retained by the North Carolina Attorney General's Office (NCAGO) to conduct an independent review of the performance of the Forensic Biology Section within the SBI Laboratory. Discussions were held with senior staff of the NCAGO on March 18, 2010 to establish the scope and focus of this project. At this time the staff of the NCAGO established primary goals of this effort as follows: 1) determine whether SBI Laboratory policies, procedural guidelines and actual practices relating to serology tests were fully compliant with the letter and spirit of federal/state laws as well as with forensic industry standards; 2) determine if laboratory Analysts accurately and completely reported lab results and 3) identify any potential cases of injustice. As a result of several cases that were brought to the attention of the review team by the non-profit Association, The North Carolina Advocates for Justice, the scope

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[1] Previous names of the Section include the Serology Section; the Molecular Genetics Section.

[2] Swecker, currently a NC Attorney, is a former Assistant Director of the FBI's Criminal Investigative Division. At the time of his retirement in July 2006 Swecker was the Acting Executive Assistant Director in charge of nine FBI Divisions including the FBI Laboratory. Wolf served in the FBI Laboratory as an Analyst before becoming a Special Agent. Wolf has a BS in Forensic Science and was the FBI Inspector in Charge of overseeing the overhaul of the FBI Laboratory in 1998-1999. Wolf retired as Assistant Director of the FBI's Crisis Response Division in 2008.

of this work also incorporated a limited review of cases that were alleged to have DNA related issues and the SBI DNA testing program.

The transfer of body fluids, particularly blood, between a victim and a suspect, or the mere presence of human blood on a suspect or an object associated with a suspect can be powerful evidence for the prosecution in a criminal investigation. Conversely, the absence of evidence of such a transfer or the absence of body fluid, especially blood, on a suspect can be favorable and even material, to the defense of an accused defendant. It can especially impact decisions that go to the heart of basic defense strategy such as whether to plead guilty, testify at trial or aggressively cross examine experts. Given the critical importance of such evidence this review closely examined how SBI Serology Analysts reported the results of serology tests for the presence of blood.

In phase one of this review steps were taken to identify cases that were similar to those presented in the original Jaquetta Thomas homicide investigation in which Gregory Taylor was ultimately charged; that is, cases in which presumptive tests yielded "positive indications for the presence of blood" but where subsequent confirmatory tests reflecting "negative" or "inconclusive" results were omitted from the final report. The final report in such cases, then, would only indicate the positive results of the less sensitive presumptive test for blood.

Out of 15,419 lab files screened and examined this review identified 230 Laboratory cases in which laboratory reports similar to the Taylor cases were present. In 40 of these cases no suspect was charged. Out of a total of 269 individuals ultimately charged in the remaining 190 cases, 80 are still serving sentences (four are on death row), three were executed and five died in prison. In phase two of this review the 230 cases identified in phase one were reviewed in detail and divided into four categories. These cases have in common that that they contain lab reports that mention positive presumptive test results but omit the results other more sensitive tests. These include:

1. Cases that mention that the presence of blood is not conclusive but fail to report that a confirmatory test was conducted and with negative results;
2. Cases with lab files that contain reports that fail to mention of one or more negative or inconclusive confirmatory test(s) and are thus incomplete;
3. Cases that contain misleading reports that stated that no further tests were conducted when, in fact, one or more confirmatory tests were conducted with negative or inconclusive results;
4. Cases in which the Laboratory test results were overstated or lab notes contradict the reported result.

It was determined that during the relevant time periods lab files were not routinely produced to an accused defendant. None of these files contained documentation that relevant lab notes were provided to the accused for review at the time they were charged or before trial.

This review did not conclude, and the reader should not assume, that each case resulted in a wrongful conviction. The individual circumstances of each defendant will have to be examined by the respective defendant and prosecutor, and in some cases the courts to make a determination as to the actual impact the erroneous lab report and underlying evidence had on the cases and whether timely production of the actual test results would have changed the outcome of the defendant's case. This will require an in depth review of investigative cases files that are located in the records of law enforcement departments across the state, court records, trial transcripts, laboratory files, appellate records, records of the Administrative Office of the Courts and any other relevant material.

It should be noted that the confirmatory "Takayama" blood test that was at issue in the Taylor Innocence Commission proceedings was discontinued in 2003 and replaced with DNA and rapid Stain identification tests. Additionally reviewers determined that lab files are now provided to prosecutors via a website accessible to a point of contact within each District Attorney's Office which places the laboratory Analyst's notes in the hands of prosecutors to enable them to be passed to accused defendants on a timely basis.

A limited review of the SBI Laboratory DNA program did not identify any systemic problems however several cases were reviewed that involved serious errors on the part of DNA Analysts and several recommendations were made to address public confidence in this important program.

This report raises serious issues about laboratory reporting practices from 1987-2003 and the potential that information that was material and even favorable to the defense of criminal charges filed was withheld or misrepresented. The factors that contributed to these issues range from poorly crafted policy; lack of objectivity, the absence of clear report writing guidance; inattention to reporting methods that left too much discretion to the individual Analyst: lack of transparency; and ineffective management and oversight of the Forensic Biology Section from 1987 through 2003. A series of Findings and Recommendations were made to address these issues including an immediate notification to the appropriate District Attorney to review the listed cases and notify any convicted defendants who may have been adversely impacted; a legal review of the Lab's reporting methods; enhanced training; more transparency in the Lab's policies

and procedures and the designation of an Ombudsman position to review and quickly act on information regarding potential laboratory issues and errors.

BACKGROUND

On April 19, 1993 Gregory F. Taylor was convicted in Wake County Criminal Superior Court of the first degree murder of Jaquetta Thomas and sentenced to life in prison. On July 23, 2007 (over fourteen years later) the North Carolina Center on Actual Innocence referred Taylor's case to the North Carolina Innocence Inquiry Commission (the Innocence Commission) for review.[3] On September 7, 2007 Taylor's case was accepted for formal inquiry and on September 3 and 4, 2009 an evidentiary hearing was held before the Innocence Inquiry Commission. A focal point of this hearing was the "confession" to the murder of Ms. Thomas by another individual and the changed testimony of two witnesses who had implicated Taylor in his original trial. On September 4, 2009 Taylor's case was recommended for judicial review by the Innocence Commission. Accordingly, a Three-Judge Panel appointed by the Chief Justice of the North Carolina Supreme Court heard evidence in this case on February 9,10,11,12 and 15, 2010. In the period between the two hearings the "confession" by individual noted above was discredited, but new information surfaced regarding certain forensic tests conducted by the SBI Laboratory. On February 17, 2010, Gregory F. Taylor became the first convicted defendant exonerated by the North Carolina Innocence Inquiry Commission.

The basis for the Three-Judge Panel's ruling of factual innocence was not articulated at the conclusion of the hearing nor in the final written order. However, considerable courtroom argument and media attention were devoted to the testimony of SBI Special Agent (SA) Duane Deaver regarding serology test reports prepared by him in 1993 when he was a Serology Analyst assigned to the SBI laboratory. SA Deaver's reports and testimony focused on items of evidence he tested that were introduced in Taylor's original trial that revealed "chemical indications for the presence of blood" on parts of Taylor's vehicle. Although Deaver did not testify at Taylor's trial, his report was

[3] Taylor's original claim of innocence was based in part on the theory that there was another suspect who had not been fully investigated. This theory was discredited before the first *Commission* hearing as the alternate suspect could not be placed in North Carolina the time of the Jaquetta Thomas homicide. Sometime before the *Commission* hearing an incarcerated acquaintance of Greg Taylor, one Craig Taylor purportedly "confessed" to the Thomas homicide to an Innocence Commission Investigator.

introduced into evidence thru a local police Detective and the contents were the subject of oral testimony by the Detective. Through the testimony of this Detective evidence was introduced that blood had been identified on Taylor's SUV which was found near the crime scene. After the testimony of the Detective both the Prosecution and Defense Attorneys referred to the evidence as "blood" for the duration of the trial.

Fourteen years later Tom Ford, the Wake County Assistant District Attorney who originally prosecuted Taylor was also assigned to represent the State of North Carolina in the Innocence Inquiry Commission hearing involving Taylor. In August, 2009, while preparing for the February, 2010 judicial hearing before the Three-Judge Panel, Ford met with SA Deaver regarding the serology tests he had conducted in 1991 for the Jaquetta Thomas homicide investigation. SA Deaver, who was assigned to the SBI Laboratory as a Serology Analyst from 1986 to 1993[4], advised Ford that in addition to conducting less sensitive presumptive tests for the presence of blood on items associated with Taylor's vehicle, he had also conducted more sensitive confirmatory tests on those same items. SA Deaver showed Ford his lab notes containing his handwritten notations that indicated the results of the confirmatory tests for blood were negative[5], a fact that was not mentioned in SA Deaver's final report. That report simply stated that there were "chemical indications for the presence of blood" on the items associated with Taylor's SUV.

At this point Ford contacted the Executive Director of the Innocence Inquiry Commission and advised that he had learned that confirmatory serology tests for the presence of blood on Taylor's vehicle had been conducted before Taylor's original trial and that these tests had yielded negative results. He pointed out that this fact was not mentioned in any final laboratory report. Ford suggested that the Commission carefully review the SBI Forensic laboratory notes of SA Deaver and compare them with the corresponding final lab reports. Even though the presence of blood on Taylor's vehicle was consistent with Taylor's latest contention before the Innocence Commission that he must have driven through the crime scene after Jaquetta Thomas was murdered, Ford felt that he was obligated to take the cautionary step of calling the circumstances of the serology tests to the attention of the Innocence Commission's Executive Director.

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[4] Special Agent Deaver is still employed by the SBI. His current job title is Criminal Investigative Analyst.

[5] SA Deaver used the "+" or "-" symbols in his notes to record the test results. SA Deaver was not known to use the "incl" result in his notes as he related to the reviewers that confirmatory tests results were either positive or negative.

There is no record that these notes were ever provided to Taylor's original defense team before, during or after the 1993 trial, nor in subsequent appeals, Motions for Appropriate Relief or other post-conviction relief petitions. The notes first surfaced when the Innocence Inquiry Commission was provided SA Deaver's laboratory notes by the SBI in preparation for the September, 2009 hearing. The Commission did not attach significance to the difference between the test results documented in the notes and the results contained in the final report because of Taylor's statement that he must have driven through the crime scene.[6] As a result minimal attention or testimony was devoted to the discrepancy in the hearing. Later, Taylor legal team member, Mike Klinkosum closely reviewed the differences between the serology test reports and SA Deaver's lab notes, and identified the discrepancy as a significant point in their efforts to support Taylor's claim of innocence at the upcoming Three-Judge panel hearing.

Taylor's Attorney, Joe Chesire, argued at the Three-Judge Panel hearing that SBI Analyst Deaver's failure to report the negative results of confirmatory tests he conducted for the presence of blood on Taylor's vehicle was not only new evidence of Taylor's innocence, but the reports themselves were "incorrect, false and misleading" and possibly even "criminal obstruction of justice". SA Deaver, who had not served in the Lab since 1993, testified before the Three-Judge Panel in 2009 that the practice of not reporting negative confirmatory blood test results which followed positive presumptive tests in the final lab report was "policy" of the SBI at the time of the 1993 trial, and that the language used in his lab report was standard verbiage prescribed by the SBI and the American Society of Crime Laboratory Directors/ Laboratory Accreditation Board. (ASCLD/LAB). [7]

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[6] See Taylor's deposition before the Innocence Inquiry Commission and testimony before the Three-Judge Panel.

[7] ASCLD/LAASCLD/LAB is the largest forensic science accrediting body in the world and is headquartered in Garner NC. It was originally created as a committee of its mother organization, the American Society of Crime Laboratory Directors (ASCLD) in 1981. In 1984, ASCLD/LAB became a separate corporate entity with its own Board of Directors that is elected by a Delegate Assembly composed of the directors of accredited laboratories and laboratory systems. Ralph M. Keaton is the current Executive Director. Keeton was the Deputy Assistant Director of the NC SBI Lab until 1995. The SBI Crime Laboratory initially met the ASCLD/LAB accreditation criteria in

STANDARD OF REVIEW

An important focus of this review was the question of whether the practices and procedures of the SBI Laboratory regarding the reporting of serology test results complied with Federal and State discovery laws and procedures and with Constitutional law. In 1991 N.C.G.S. §15A-903 (e) stated "Upon motion of the defendant, the court must order the prosecutor to provide a copy of or to permit the defendant to inspect and copy or photograph results or reports of physical or mental examinations or of tests, measurements, or experiments made in connection with the case, or copies thereof, within the possession, custody or control of the State…" In addition, subsection (d) required the production to the defendant of documents and tangible objects that were "material to the preparation of his defense". The 1992 case of State v Cunningham 108 N.C. App 185, 423 S.E. 2nd 802 (1992) established that laboratory notes were included under Section 15A-903. Subsequent amendments to this Statute in 2003 established what is referred to as "open file discovery" in North Carolina criminal proceedings. Under the 2003 revisions to section N.C.G.S §15A-903 the complete files of all law enforcement and prosecutorial agencies were to be made available upon motion of the defendant including "investigating officer's notes, results of tests and examinations or any other matter or evidence obtained during the investigation…." (N.C.G. S. § 15A-903 (a) (1)).

The well known United States Supreme Court decision in Brady v Maryland, 373 US83 (1963), and subsequent cases established that the Fifth and Fourteenth Amendments to the U.S. Constitution imposed an affirmative duty on Prosecutors to disclose evidence "material to guilt or punishment" to the defendant to ensure a defendant has a fair trial. This is often referred to as "exculpatory" information or evidence. Whether a piece of information is "material" to guilt or punishment was later defined as the type of evidence that if disclosed "would have produced a different verdict." (Strickler v Greene, 527 U.S. 263,281 (1999)). The burden is on the prosecutor as an officer of the court to provide *Brady* material to the defense before trial. Any information in the files or possession of an investigative agency is deemed to be in the possession of the Prosecutor which places a heavy burden on both the law enforcement agencies and prosecutors to produce potentially exculpatory information to an accused defendant.

1988 and is reaccredited every five years with a full review of the laboratory including an onsite inspection of the forensic disciplines.

This review focused on identifying any investigations/prosecutions that had the potential to lead to violations of this standard; that is, cases where the defense was not fairly notified that confirmatory serology tests had been conducted and that the results of those tests were negative or inconclusive, a fact that could be favorable to a competent defense of the accused.

REVIEW RESULTS

In phase one of this review an initial sampling of cases from 1989 to 1991 identified over 30 instances consistent with the scenario presented in the Taylor prosecution. Senior NCAGO staff again consulted and the reviewers were instructed to screen and review all final reports for all serology cases with similar language[8]. This phase identified a total of 15,419 lab files[9] from January, 1987 through January, 2003 containing one or more serology tests. These files were screened for language in the final test reports that contained "*indications of blood*" or "*chemical indications for the presence of blood",* which is indicative that a least one presumptive test for blood was conducted with positive results. This language is identical or similar to report language used by the lab in the Jaquetta Thomas homicide investigation. A total of 932 files (approximately six percent of those screened) were identified that contained this language.

Each of these files was reviewed in detail in phase two of this review. A total of 230 files, including seven death penalty cases, contained at least one instance where the lab notes reflected that a positive presumptive test for the presence of blood was followed by a confirmatory test that yielded results that were "*negative"*, "*inconclusive"* or "*no result",* but did not include this information in the final report. This represents 1.49% of the serology files from 1987 to 2003. The only record of these negative or inconclusive tests is contained in the Analyst's handwritten lab notes. A total of 40 of the 230 cases involved investigations in which law enforcement were unable to identify

[8] At this point the contract was extended to add additional hours to accommodate this expanded review.

[9] All death penalty cases regardless of the time period were included in this total.

suspects or no suspects were charged.[10] As a result, 190 of the 230 cases actually resulted in charges filed. The 230 cases fall into one of four categories.

The first category includes one or more report(s) that did not mention the negative, or in five cases inconclusive, confirmatory test but did ultimately state that the presence of blood was not conclusive.[11] This language was used almost exclusively by one Analyst. These reports are identified in this report as questionable because the reader would never know that a more sensitive and reliable test was conducted without reference to the lab notes, which were not routinely produced. The reader would be alerted, however, that the presence of blood was not considered conclusive, a clue that might alert a more experienced Attorney that a confirmatory test was conducted. There were 85 such instances identified with 23 involving cases where one or more defendants are still incarcerated, three who are on death row. One defendant was executed. Eight of the cases involved defendants who were dismissed or found not guilty and in 14 of the cases no suspects were identified or charged. One individual died in prison. In the balance of the cases the defendant(s) served their sentences and were discharged.[12]One of the dismissals resulted in the commitment of the defendant to Dorothea Dix Hospital. One defendant was sentenced to life and died in prison.

The second category involve reports that omitted the negative or inconclusive results and simply stated that there were “chemical indications for blood” or comparable language. This language, which is similar to the report language in the Taylor case, fails to properly qualify the test results as unconfirmed and does not inform the reader to the existence of further test results that were negative or inconclusive. The impression is left

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[10] An additional 20 cases resulted in dismissals or not guilty verdicts.

[11] After noting “indications for the presence of blood” This language states “ insufficient evidence was observed to allow for the conclusive identification of blood” instead of stating that further were tests conducted by the Analyst that failed to confirm the presence of blood. This method was the least serious of the reporting issues identified and was the subject of considerable discussion as to whether it should be included in this report. The decision was made to err in favor of including these cases because the negative test results could only be found in lab notes, a second test is not mentioned, and the report language is ambiguous.

[12] Some of the cases involved multiple defendants with a mixture of dispositions, i.e. a defendant was convicted and released and one is still incarcerated, therefore the number of cases may be counted more than once. The attached Appendix B shows a detailed breakdown of the various dispositions and the defendant’s current status.

that blood is present as transpired in the original Taylor trial. There were 105 of these cases identified. This number includes 43 cases involving one or more defendants who are still incarcerated, including one who is on death row. Four defendants died in prison. There were 9 cases which resulted in dismissals or not guilty verdicts[13] on all defendants and 15 cases in which there were no charges filed. In the remaining cases the defendants had served their sentences and were released. (See footnote 12).

The third category involves cases in which a report states "indications" or "chemical indications" of blood were detected and that no further testing took place, despite the fact that one or more confirmatory tests were indeed conducted on the same items with negative or inconclusive results. This statement is contradicted by the handwritten lab notes which clearly show further testing took place. There were 36 cases identified in this category. Three of these cases involved defendants who are still incarcerated and one defendant has been executed. There were no suspects identified or charged in 11 cases, four cases resulted in dismissals and two ended in not guilty verdicts. The balance of cases involves prosecutions in which all defendants were released after serving their sentences. (See footnote 12)

The fourth and most serious category involves cases in which the reported actual results of the confirmatory tests were over reported or not reflective of the results contained in the lab notes. There were five such cases in this category, all handled by SA Deaver. One of these cases involved a defendant who was executed. In two instances the words "revealed the presence of blood" were used when in fact the results of the confirmatory test were reflected in the notes as negative. This language was only used by Analysts when the presence of blood was confirmed by a positive confirmatory test. In three other instances the report stated that further tests were "inconclusive" or "failed to give any result" when the lab notes reflect negative results. It should be noted that the Analyst, SA Deaver, advised reviewers that he was trained that confirmatory tests had only two possible results, negative or positive. SA Deaver's lab files, however, revealed these two instances in which SA Deaver used the words "*inconclusive"* in connection with Takayama[14] test results despite his notes reflecting a negative result in

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[13] One was found not guilty by reason of insanity and no information was provided as to whether this person was committed to a facility for the criminally insane. On case resulted in a finding of no probable cause.

[14] Takayama is the name of a confirmatory test for the presence of blood. A positive result is considered confirmation that blood is present, although the test will reflect a positive result to commercially catalase or peroxidase which can be found in products

one cases and three tests and three negative results in the other case. In the remaining four cases, one defendant received probation in 1988 and two defendants completed their sentences. The fifth involved two defendants. One defendant's charge was dismissed and the other served his sentence and was released.

The information was not available in the files we reviewed to state whether the omission of negative or inconclusive test results in the final lab report in any of the 190 cases was material to the defense of the accused, violated criminal procedures or failed to meet any other well established constitutional or statutory standard. Without court transcripts or investigative files reviewers could not determine whether the tested item was introduced into evidence or influenced the outcome of the cases in any way. The question of whether a decision was made to plead guilty, not testify or some other strategic defense action was taken based on a questionable lab report can only be answered by the accused or his/her Attorney. These decisions must be made on a case by case basis after reviewing the investigative files, lab files, court proceedings, and any other relevant material.[15] Such judgments must fall to the relevant prosecuting attorneys, the affected defendants or accused suspects, or ultimately the court system.

This review did determine, however, that omitting negative or inconclusive confirmatory test results for the presence of blood in final laboratory reports and especially incorrectly reporting those results had the potential to lead to violations of the Federal Constitutional and North Carolina discovery laws by not reporting information that might have been helpful or material to the defense of the accused. This review also found that SA Deaver's testimony before the Innocence Commission Three-Judge Panel with respect to the SBI and ASCLD/LAB policies was inaccurate because neither the SBI nor ASCLD/LAB had written policy regarding report language until 1997 and 2004 respectively. In addition ASCLD/LAB has never provided specific language to be used in a forensic report, however it was, indeed, the sanctioned practice of some NC SBI Laboratory Analysts at the time to omit the results of certain negative or inconclusive confirmatory tests in final lab reports under certain circumstances, and this practice later became written SBI policy in 1997.

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such as food wrappers and contact lens cleaning materials, and is used in various manufacturing processes.

[15] The attached Appendix B provides comment as to whether other relevant forensic tests or matches such as DNA were reflected in the lab notes or reports.

This review further found that as late as 1996 the SBI training guidance to Laboratory Analysts was to not provide lab files/notes without a court order. Other policy guidance permitted lab notes to be made available to the prosecutor upon request. Irrespective of this obvious conflict, none of the lab files examined during the course of this review contained documentation or any other evidence that the lab file or notes were provided contemporaneous with the original trial to either the prosecution or the accused.

There were seven death penalty cases identified out of the 190 files that resulted in prosecutions which involved 4 defendants currently on death row and 3 who have been executed. These lab files were reviewed in detail and the results are summarized in Appendix B. As noted above, one case involved a situation in which the Analyst, SA Deaver reported that the test results "*revealed the presence of blood*" despite the fact that the confirmatory test was noted as negative ("T-") in his lab notes. This review was unable to determine why this occurred but the report is clearly wrong. The defendant confessed to committing the homicide and the NCAGO advised that a review of the trial transcript revealed that the item was not introduced into evidence, but the misreporting of the confirmatory test in that fashion is unacceptable and should be reviewed for appropriate action by the SBI since the Analyst is still employed by the SBI as a Special Agent. This was one of two such instances (involving the same Analyst) where a negative confirmatory test was reported as "*revealed the presence of blood."*

A detailed listing of the 230 lab files is contained in the spread sheet in Appendix B. This listing and brief analysis is intended to assist in prioritizing those cases that require a more in-depth review. Appendix B contains a detailed breakdown of the cases that shows the case description, case details, disposition, current status of the convicted defendants, a description of the report language utilized and comments regarding the reporting language.

It should be noted that this review focused mostly on historical practices and policies that are no longer in use at the NC SBI Forensic Laboratory. The confirmatory blood tests that were conducted in the Taylor case are no longer employed by the SBI Laboratory, having been replaced in 2003 by DNA testing and an updated human species test. Accordingly, issues relating to these tests occurred no later than the end of 2003. It was also established that as of March 2010 complete SBI laboratory files are routinely provided via online access to every District Attorney's Office in the state, thus enabling the relevant District Attorney to meet his/her obligations under U.S. and North Carolina law to provide appropriate and timely discovery material to the defense in a criminal proceeding. Furthermore the reader should take note that a conservative approach was used to identify the cases identified above. If only one instance of the use of the questioned reporting language was identified among multiple exhibits, the case

was counted among the 230 and reviewed further. Many of these cases involve circumstances in which dozens of items, and sometimes several loci, on the same item were tested.

Based on this review a series of recommendations were made to ensure the Taylor scenario does not recur; to identify and correct any injustices that may have occurred in the past; and to ensure going forward that all laboratory reporting methods are compliant with laws and policies. Most importantly, the recommendations are designed to restore the public's trust in the SBI Laboratory.

METHODOLOGY

For purposes of this review the SBI Lab was asked to produce all Policy and Procedures Manuals that documented both current and historical policy guidance for SBI employees in their official duties, with a particular focus on SBI Forensic Biology Section procedures and protocols. The reviewers analyzed thousands of pages of such documentation along with Training Manuals, Evidence Manuals, Administrative Orders, transcripts of legal proceedings, SBI Laboratory files and other similar records.

As noted above, over 15,000 lab files were screened[16] for relevant language in final lab reports, and approximately 6000 of these lab files were reviewed by hand. This stage of the review identified lab files that contained at least one serology report which provided the positive results of a presumptive blood test while omitting the results of an inconclusive or negative confirmatory test. Those identified files were then reviewed in detail to determine such things as the type of investigation, the extent of lab work requested and completed, the disposition of the case, whether the defense team accessed the lab notes, and the defendant's incarceration status.

Interviews were conducted of current and former SBI employees and outside contacts deemed to have relevant information, including Executives representing the American Society of Crime Laboratory Directors-Laboratory Accreditation Board (ASCLD-LAB), the Executive Director of the NC Innocence Inquiry Commission, and representatives of federal and state forensic labs across the US. The review team also examined media reports, open source information and available literature on Forensic Science Laboratories. Finally, the review team met separately with representatives of the "North Carolina Advocates for Justice" and attended the annual NC District Attorney's

[16] A portion of the files were partially automated and thus screened electronically.

conference to obtain relevant information and viewpoints regarding SBI forensic practices. A comprehensive list of documents reviewed can be found in Appendix A of this report.

SEROLOGY TESTS

Prior to January 2003 a series of chemical reagent and antigen-antibody reaction based tests were utilized to identify the presence of biological or body fluids on an object. These tests focused primarily on the identification of unknown blood, semen and saliva present on potential evidence collected at crime scenes or from victims, suspects or other persons of interest in a criminal investigation. The presence of blood was identified using a series of field, presumptive and confirmatory tests to ascertain, first, whether blood was present, and if so, whether the blood was of human or animal origin. Additional testing could be conducted to "type the blood if a sufficient amount of sample was available to perform that test. The final testing conducted would provide an enzyme marker. Such tests could be used to eliminate or to include suspects, but they were not sufficiently precise to conclusively link a particular suspect to a particular item of evidence with the same level of certainty as DNA testing.

The confirmatory and blood typing tests were conducted in a laboratory setting, whereas the field and presumptive tests could be conducted either in the field at the crime scene or in the laboratory. One field test, known as the “Luminol” test, enables a crime scene processor to rapidly screen large areas for the possible presence of blood, but it is not considered a positive identifier of blood since it also reacts to such things as copper, zinc, perioxidase and such household products as bleach, soaps and detergents. Another presumptive test, termed the “Kastle-Meyer” or “Phenolphthalein” test, is also not considered a confirmation of the presence of blood because it can also react to peroxidase which is present in certain common plants like tomatoes, turnips, artichokes and horseradish. SBI training materials also mention that this test could produce a positive reaction to certain bacteria. The “Takayama” test, a more sensitive confirmatory test, could accurately detect the presence of blood but could not differentiate between human or animal blood. According to scientific literature the Takayama test does not react to any other substance that occurs naturally, but it will react to materials containing commercially purified catalase or peroxidase. Species origin tests in use prior to 2003 included the “Ring Precipitin” and “Ouchterlony” tests which could be used simply to determine whether the sample was human or animal blood. All of these tests were phased out and replaced by better technology by 2003.

The final testing procedures for blood included ABO and enzyme typing that could be used to include or exclude a particular individual as a potential contributor. Once a

blood profile was established the percentage of the population that possessed the same blood type characteristics could be calculated statistically. The smaller the percentage the more precise the test result.

With the introduction of DNA testing into the forensic field beginning in 1985 several of the commonly used serology tests began to be phased out in forensic laboratories across the country. By January 2003 the NC SBI Lab had phased out Takayama, Ring Precipitin, Ouchterlony, ABO typing and enzyme tests altogether. After that date, questioned blood samples could be subjected to presumptive tests using Luminol and/or Phenolpthalein at the crime scene; Phenolphthalein and a new species origin test known as the Rapid Stain Identification (RSID) test at the lab for confirming the presence of human blood; and then lastly DNA testing. DNA testing, with its ability to make a mathematically probable match to a specific contributor, became the gold standard in forensic laboratories across the country.

LABORATORY POLICY AND PROCEDURE REVIEW

The SBI Crime Laboratory was established as a Section within the SBI in 1955, and it currently exists as a Division within the SBI led by an Assistant Director. The Laboratory currently consists of seven Sections[17] and two Regional Laboratories that offer a partial suite of forensic services. This Review focused on the Forensic Biology Section[18] and specifically certain Serology testing and reporting policies, practices and procedures relating to the identification of body fluids from 1987 to 2003. A limited review was conducted of the DNA Lab's DNA testing program. The Laboratory is ASCLD/LAB accredited and has been since 1988. Approximately half of the Lab's Analysts are sworn SBI Special Agents. According to the Laboratory Assistant Director, Jerry Richardson, The SBI has recently begun filling open Analyst positions with appropriately qualified non sworn employees in all forensic disciplines except Chemical Toxicology and Latent Fingerprints because of the need for these Analysts to assist in processing clandestine drug laboratories.

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[17] These Sections include the Drug Chemistry; Documents and Digital Evidence; Evidence Control and Administrative Services; Firearm and Tool Mark; Latent Evidence; Molecular Genetics and Trace Evidence Sections. There is also a quality Assurance office that reports to the Deputy Assistant Director.

[18] Previous names include Molecular Genetics Section and Serology Section.

Identifying all the relevant policies, procedures and practices, particularly those in effect during the time period from 1986 to 1997, proved challenging due to the absence of any specific written guidance or standard operating procedures governing the reporting of test results. However, this was not a situation unique to the NC SBI Laboratory. Representatives of the FBI Laboratory, other State Laboratories and the American Society of Crime Lab Directors/Laboratory Accreditation Board (ASCLD/LAB) confirmed that such was also the case generally with federal and state forensic laboratories around the country. The focus of written policies and procedures at the time was on testing protocols, laboratory conditions, qualifications and proficiency of lab personnel and quality control and lab safety rather than the manner in which the tests results were reported.

As ASCLD/LAB refined its own accreditation criteria forensic laboratories around the country followed with more specific policy guidance to their policies and procedures. According to interviews of ASCLD/LAB executives and review of ASCLAD/LAB documents written policies regarding methods of reporting laboratory test results did not begin to appear until about 2004. Thus, while it has become more focused on report writing in recent years, the ASCLD/LAB standards and accreditation process were of no assistance to forensic laboratories in setting even minimum reporting standards during the time period included within this review.

It was determined through interviews, lab file reviews and reviews of training manuals that no written policy on how to report laboratory results existed in the SBI Laboratory until 1997. Several different practices were identified, however, through interviews of senior Analysts, current and former lab personnel and a review of documentation (including lab notes and reports) from that time period. It is evident from this research that the subjective judgment of Analysts was a major factor in determining how serology test results were reported.

The absence of reporting guidelines or policies created obvious confusion on the part of Analysts. Some Analysts when reporting on the results of the series of serology tests conducted to detect and confirm the presence of blood sometimes omitted the results of multiple confirmatory tests when they were negative or inconclusive. Other Analysts under the exact same circumstances (i.e. a positive presumptive test and a negative confirmatory test) would add a qualifying sentence stating that “additional tests failed to confirm the presence of blood”.

Prior to 1997 no standard report language was used, but variations of these two methods of reporting were noted with no satisfactory explanation appearing in any policies or procedures to explain why the second sentence was either added or omitted.

Training and Policy Manuals focused on test procedures and identification of positive results, but no written policy could be located which suggested omitting the results of the confirmatory test. An interview with Mark Nelson, Forensic Biology Section Chief from December 1, 1986 to April 1, 2002, failed to clarify this issue Nelson, advised that he thought use of the qualifying second sentence described above was a common practice. He acknowledged that omission of the confirmatory test results was a bad practice and explained that report writing was discussed at Section meetings, but only in the context of how to report positive results. He recalled standardizing how positive results were reported, but acknowledged that no discussion was held regarding how to report negative or inconclusive confirmatory tests following a positive presumptive test. His main concern was to ensure test results were never "overstated". Nelson further acknowledged that that Section policy in existence between 1997 and 2001 that provided report language that in essence only reported positive presumptive tests when followed by an inconclusive confirmatory test was confusing. He stated that he never intended that Analysts omit qualifying language regarding the results of a subsequent confirmatory test.

Subsequent written policy issued in 2001 appeared to permit an Analyst to exercise independent judgment as to whether a confirmatory test was inconclusive because in his/her opinion there was insufficient material to test, in which case the second sentence was omitted. For Analysts who were trained that there was no such thing as an "inconclusive" result this presented a dilemma. Some Analysts appeared to apply this recommended language to cases even when their notes reflected a negative test result. For example, in a sampling of lab files assigned to Analyst Deaver from 1988 through 1993 in which a positive presumptive test was followed by a negative Takayama test, 34 reports failed to mention the negative confirmatory test. In five instances the report stated that "the quantity of stain was insufficient for further testing" or "the quantity of stain was insufficient to test further" when in fact a Takayama test (sometimes multiple tests) was conducted on the item(s) and the corresponding lab notes reflected a negative result.

Overall there were 36 instances involving 5 different Analysts where it was reported that no further tests were conducted due to insufficient quantity of sample when in fact one or more tests were conducted on that same item and results were recorded as negative in the corresponding lab notes. In three of these instances both Takayama and Ouchterlony (blood species origin) tests were negative, yet the result was reported as

positive (that is, “gave chemical indications for the presence of blood”).[19] The quantity of stain was reported as “insufficient for further testing”. This reporting method does not just omit the results of the subsequent tests: it misstates the facts and leads the reader to believe that no further tests were done.

It should be noted that identical language was often used in reports in which there truly were no further tests conducted beyond the presumptive test (i.e. “The quantity of stain was insufficient to test further”). Thus, even an experienced Attorney accustomed to reading lab reports could never be sure which tests were actually conducted or what the test results actually were without access to the Analyst’s laboratory notes.

One current SBI Laboratory Analyst interviewed stated that it was acceptable to make a subjective judgment that the Takayama test was not positive due to the limited size, quality, age or strength of the sample tested. Another Analyst regularly used the shorthand notation “inc” to signify inconclusive instead of “T-“when she judged that the material was of insufficient quantity or quality to stimulate a positive result (i.e. the formation of a salmon colored crystal). Others simply used the “T-“ short-hand in their notes. Some used both notations. Several Analysts interviewed, including SA Deaver, however, contended that there was no such thing as an “inconclusive” result. To compound the confusion the relevant training manuals and scientific literature do not refer to any result other than positive or negative.

There was anecdotal evidence that some Analysts were not objective in their mindset. Every Analyst interviewed during this review advised that they were trained that a negative or inconclusive confirmatory result did not mean that blood was not present. When a new written policy regarding report writing was issued in 2001 it was noted that “”obtaining a negative result, or no reaction on a Takayama test does not mean blood isn’t present, only that you failed to confirm the presence of blood”. In Section Chief Nelson’s words “you can’t make a positive statement from a negative result”. This is a scientifically correct statement but it does not justify withholding a test result that is not positive. Two Analysts advised that since they were unable to get a positive result from the plant material and bacteria mentioned in their training manual a presumptive test result meant to them “its blood”. In addition the former Laboratory Section Chief, Mark Nelson, articulated to reviewers that the he considered the primary consumer of the lab reports to be law enforcement. Similarly, SA Deaver stated that his reports were

[19] Analyst Bissette accounted for 24 such instances followed by Deaver (5), Milks (2); Taub (2) and Spittle (2).

"speaking to the officer." In contrast the current Section Chief and Analysts currently assigned to the Lab universally responded that their customer was the criminal justice system as a whole.

Prior to 1997 general policy guidance addressed the topic of report writing but was ambiguous and inadequate to provide direction on reporting test results. For example, the May 25, 1990 edition of the "Quality Assurance (QA) Manual for Serological and Biological Typing of Biological Materials" states in Section 8.3.1 that:

> "All items analyzed must be reported. When writing the report, the analyst must double-check his notes and the electrophoresis run sheets for accuracy in transcription. All reports will be prepared in accordance with existing Bureau policy."

Note that this language fails to say all tests or all test results must be reported, just all "items". Section 3.2.4 states:

> "Notes to document all tests performed on each item and those test results will be recorded in the permanent file of every case submitted for Serological and Biochemical analysis."

Here the specific reference to "tests" could give the impression that "items" and "tests" are different, particularly since multiple tests were often conducted on the same item. The 1991 manual also states that a Serology Supervisor or his designee was to review all reports for "scientific soundness and adherence to Bureau and section policy" (Section 8.3.2). Bureau-wide policy, however, was silent on the issue of reporting laboratory test results.

The 1991 Section Manual revision required an independent review of DNA tests by a second Analyst who must agree on the interpretation of the data to be reported (Section 8.1). Section 8.5.2 dictated that "Lab reports will be issued on all cases received by the DNA Unit and these reports will be prepared in accordance with existing Bureau policy". Note the "DNA Unit" portion was dropped in the August 15, 1996 revisions of the manual so that the provision then read "Lab reports will be issued in all cases." In 1996 the same language was dropped from Section 8.1 to require an independent Analyst's review of "all cases".

Contrary to SA Deaver's Three-Judge Panel testimony, ASCLAD/LAB's accreditation checklists and policies were silent on this issue until 2005. In the 2005 ASCLD Manual the relevant guidance provided was that "written reports must be generated for all analytical work performed by the laboratory". According to current ASCLAD/LAB

executive management the process of accreditation matured over the years and as their requirements became more rigorous member Laboratory policies became more detailed and specific to require reporting of all lab tests, but the actual reporting language has never been prescribed by ASCLD/LAB.

The SBI Training Manual in effect during the 1986 to 1997 time period provided some guidance and relevant information on test limitations and the interpretation of test results. For example, the Training Manual in effect from 1985 through 1999 stated "*The phenolphthalein test is a presumptive catalyst test for the detection of blood. ….. False positive reactions can occur. The literature reports that certain plants including horseradish, tomato, turnip and Jerusalem artichoke possess elevated levels of peroxidase which may give a positive reaction with phenolphthalein. ……. The literature also reports that bacteria which possess a high level of catalase activity may also give a false positive reaction."*

The Training Manual also stated "the Presumptive tests, or catalytic tests for blood center on the erythrocyte portion of the formed elements…… This technique allows for a quick visual screening of blood <u>but should not be judged as a confirmation of the presence of blood</u>. Presumptive tests are designed to be used in conjunction with confirmatory tests for blood if enough of a sample is available."

Regarding the confirmatory test for blood, the Training Manual stated "The Takayama test will confirm the presence of blood and is designed to be used in conjunction with presumptive testing for blood. …… A positive result is visualized microscopically by the formation of salmon colored rhomboidal or stellate crystals. The only materials that will give a positive reaction other than blood are commercially produced preparations of catalase and peroxidase, items not occurring in nature." Thus only the formation of the salmon crystal could be interpreted as a positive result. No reference was found as to the possibility an "inconclusive" result or a "no result".

SBI policy issued in 1997 specifically guided serology Analysts to report only the results of positive presumptive tests for blood even though one or more confirmatory tests were recorded as inconclusive in their lab notes. As with the practice of reporting lab results in this manner prior to 1997, this reporting method failed to adequately place the reader on notice as to the existence of subsequent tests and had the potential to be material to the preparation of a defense to charges where the presence of blood was a central issue. This policy was published as Molecular Genetics Section Administrative Order 97-25, which became effective on September 8, 1997. This order stated that when a presumptive test for the presence of blood or saliva was positive but confirmatory tests yield "*inconclusive results or the material is of limiting quantity to do additional testing."*

The Laboratory report should read *"Examination of _____(Item(s) revealed chemical indications for the presence of _____"* (blood or saliva depending on the test conducted.) Thus this policy prescribed that only the presumptive positive test is reported without reference to the results of the confirmatory test (s).

Interviews of Analysts and Supervisors revealed confusion and lack of consistency as to the possibility of an "*inconclusive*" result. According to the SBI training Manual, the Takayama test was considered a positive result when "*visualized microscopically by the formation of salmon colored rhomboidal or stellate crystals*. " No reference is made to the possibility of an "*inconclusive*" result or how such a result would appear under a microscope. Some Analysts stated that there was no such thing as an "*inconclusive*" Takayama test since the crystal either formed visually under the microscope or it did not. Other Analysts stated that on occasion it appeared that the crystal was "trying to form" and turning color, but since it did not actually form they judged the test "Inconclusive", "no result", or even went further to state that the crystal did not form because the evidence material was of such small size that the reagents applied were not able to react.

The promulgation of the 1997 language seemed to have little effect on how individual Analysts reported serology test results as a sampling of lab files of the post 1997 vintage continued to reveal several variations of how the test results were reported. The report phraseology "*chemical indications for the presence of blood*" would not place a reader on notice that a confirmatory test had been conducted. This policy persisted through March 19, 2001. It should be noted that during this time period reliance on DNA testing was increasing and the need for conducting confirmatory blood tests, blood typing and blood enzyme identification was eventually phased out in January 2003 in favor of DNA testing.

DNA LIMITED REVIEW

During the course of this review several individual laboratory cases were brought to the reviewer's attention by the North Carolina Advocates for Justice (NCAJ) as potential examples of DNA testing issues. Because of the serious nature of the cases (all involved homicides or rape allegations, including one death penalty case) laboratory files, relevant material provided by the NCAJ, SBI DNA test related policy and Quality Control documents and DNA program audit and Analysts proficiency reports were reviewed. The cases reviewed included *State of North Carolina v Francisco Laboy; State of North Carolina v George Earl Goode; State of North Carolina v Leslie Lincoln; State of North Carolina v Terrance Rodricus Elliot and State of North Carolina v Dwayne*

Dail. All five cases involved DNA testing or trace evidence issues and were the subject considerable media attention, high profile trials and/or appellate reviews.

In the ***Lincoln*** case an SBI lab Analyst in a test conducted in July 2003 inadvertently switched the known DNA sample profiles of defendant, Lincoln, with the victim causing a report to be issued linking the victim's body fluid to the defendant. Lincoln was found not guilty in a jury trial. The Analyst retired shortly after this incident and during a subsequent inquiry. ASCLD/LAB conducted an inquiry and found that the error was not a systemic quality control problem but made recommendations to prevent future errors of this nature which the Lab accepted. Remedial action was taken by the SBI laboratory to prevent this type of analyst error by requiring more specific labeling of the known profiles and a retest after a match is made.

In the ***Labor*** *case* the lab's genetic profile for Laboy, a male, identified him as a female in a 2004 DNA report. In a separate report a "male fraction" of a partial DNA profile taken from the victim's body was reported to match the female victim, an apparently erroneous result. [20] The scenario that was presented in *Laboy* was also reviewed internally and by ASCLD?LAB and has been remediated by incorporating newer technology that now has DNA reports generated electronically by the DNA testing instrument and changing the report language to better clarify the results of the test.

While the circumstances in the two cases have been addressed by the SBI Laboratory by implementing remedial procedural changes, such mistakes undermine the public's confidence in the results of SBI Laboratory tests.

The ***Goode*** case involved an appeal in which DNA tests were conducted on material that had been stored carelessly in a court evidence storage room and comingled for 12 years and which also had poorly documented chain of custody. In addition SA Duane Deaver's testimony and lab report regarding the results of a presumptive test for blood was found by a Federal District Court Judge in his ruling on Goode's Habeas Corpus motion to have been falsely presented. In this proceeding Goode also raised the question of whether a Laboratory should refuse to test materials that may have been subjected to cross contamination or poor storage conditions. The Lab's actions were

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[20] This reported result is considered by experts consulted by the reviewer to be correct by DNA reporting standards because it involves a DNA mixture that was retested after an original test had been conducted and minimal material was left on the test swab. The standard reporting language under these circumstances has been changed to eliminate the confusion.

upheld on appeal however Goode's sentence was reduced from death to life in prison based on a finding of ineffective assistance of counsel. ***Elliot,*** involved a 2001 rape/murder investigation in which the defendant alleged in a 2007 Motion for Appropriate Relief that the evidence tested by SBI lab was subject to cross contamination at the crime scene and in the lab during testing procedures. Elliot's appeal was unsuccessful and he remains on death row. In ***Dail***[21] an SBI lab report omitted the results of a trace evidence test that determined that two hairs found at the crime scene were different from defendant, Dail's hair. A corrective report was issued but Dail was still convicted. A DNA test later exonerated Dail after he served a substantial portion of his sentence.

A limited review of SBI DNA testing proficiency and quality control was conducted. The review determined that the SBI Laboratory meets all FBI DNA Advisory Board (DAB) Quality Assurance Standards For Forensic DNA Testing Laboratories. The FBI sets these standards pursuant to the Federal DNA Identification Act (42 U.S.C. §14132). These standards require periodic outside audits to maintain certification. The most recent audits were reviewed along with the last two years worth of Internal Analyst proficiency reports. All Analysts were determined to be qualified by education, experience and successfully passing competency tests to conduct DNA tests. It was determined that while Analysts proficiency reports were conducted at prescribed intervals the use of "blind" testing is not a practice employed by the SBI Lab. In routine proficiency tests the Analyst is tested under controlled conditions and is aware that he/she is being tested. In blind tests the Analyst is unaware he/she is being tested. A simulated work request is submitted by an outside agency through the normal channels without the Analyst knowing that the items submitted are "planted" by the cooperating outside agency. This testing method provides a more realistic measurement of analyst proficiency. Blind testing is not employed by all laboratories because such a program is considered to be difficult to manage, but it is considered a best practice.

No issues were identified in these reviews that would call into question the proficiency of analysts, quality control protocols or the adequacy of the SBI's DNA testing procedures. Nevertheless the mistakes made in the above cases are disturbing. When examined in conjunction with the issues raised in this report involving serology tests there is need to establish the highest degree of confidence in arguably the most important tests

[21] Dail was accused of raping a 12 year old girl in her home. Dail was 19 when he began serving his sentence and spent 18 years in prison until a DNA test revealed semen found on the victim did not match his DNA profile.

conducted in the SBI laboratory, i.e. DNA testing. In addition experts acknowledge that the reporting of DNA mixtures has an element of subjectivity. As this report has demonstrated, when the subjective element is present in report writing the objective mindset of the Analyst is critical and policy guidance must be specific and transparent.

It was determined that the SBI Lab's processes and procedures are in need of public transparency and a process for prosecutors, the defense bar and the public in general to identify lab issues and mistakes at the earliest possible moment before a potential injustice takes place. Several recommendations address these issues.

SUMMARY FINDINGS

1. No formal policy regarding the method of reporting SBI laboratory serology test results existed prior to September, 1997. Prior to this time the only guidance provided to Analysts on how to report the results of forensic tests in final lab reports came through training and, less formally, through supervisory direction and peer advice. Ultimately it was left to each individual Analyst to apply his or her own judgment as to how to report, or whether to report, the results of all lab tests conducted on evidence items submitted for testing to detect and/or confirm the presence of blood.
    a. Some verbal direction was provided by the Forensic Biology Section Chief which focused on how to report, and not over-state, positive results, while minimal or no guidance was provided regarding how to report a "negative" or "inconclusive" confirmatory test following a positive presumptive test.
    b. The American Society of Crime Lab Directors/ Laboratory Accrediting Bureau (ASCLD/LAB), the primary accreditation body for forensic crime laboratories, provided no specific report writing standards until 2004.

2. A review of all 15,419 serology laboratory files for the time period January, 1987 to January, 2003 revealed 230 instances where negative or inconclusive results of test conducted to confirm the presence of blood were omitted from a final Laboratory report. Conversely, during the same time period positive presumptive and confirmatory test results were always included in final laboratory reports. The import of such omissions was that anyone using these report results would not know that subsequent and more sensitive laboratory tests had been conducted on the same evidence item and that the results of those tests were negative or inconclusive,
    a. During this time period neither prosecutors nor defense counsel routinely requested the disclosure of lab notes or questioned Lab Analysts

regarding the test results, even though they could be made available by of a court discovery order.

b. Little or no documentation from 1987 through 2002 was located that laboratory files were provided to defense attorneys or prosecutors.

c. The practice of not reporting the results of certain confirmatory tests created conditions under which negative laboratory serology test results which may have been material and/or exculpatory to the defense were not identified to either the prosecution or defense counsel.

3. From September 8, 1997 forward a series of policies regarding "Report Writing Format" were promulgated within the Molecular Genetics Section (now called the Forensic Biology Section) of the SBI Laboratory. These policies provided inconsistent and sometimes confusing guidance on how to report the results of serology tests conducted on evidence submitted to the Laboratory to test for the presence of blood. From June 13, 2001 forward the policies permitted Analysts, in their discretion, to choose to either omit negative or inconclusive results of subsequent confirmatory tests for the presence of blood from lab reports or to add qualifying language that mentions the failure of subsequent testing to confirm the presence of blood. It should be noted that although the term was used, the definition of, or even a reference to, the existence of an "inconclusive" confirmatory blood test was not found in any literature, training manuals or policies.

   a. From September 8, 1997 to March 19, 2001 the standardized SBI laboratory format for reporting results in situations where a positive presumptive test was followed by an **"***inconclusive*" confirmatory test stated that the Analyst should only report the results of the positive presumptive test by stating that the examination "*revealed chemical indications for the presence of blood***."** Negative test results were to be reported as "*failed to reveal the presence of blood*."

   b. From March 19, 2001 to June 13, 2001 a policy change introduced a second sentence to the report format which stated that **"***further testing failed to confirm the presence of blood*" was to be used if the analyst judged that an inconclusive or "no result" was "*possibly because the material is of limiting quantity".* This qualifying sentence would adequately place the reader on notice that a confirmatory test was conducted. Negative tests were to still be reported as "*failed to reveal the presence of blood*."

   c. From June 13, 2001 forward the standardized language permitted, <u>but did not require</u>, the reporting Analyst to incorporate the qualifying language

"*revealed chemical indications for the presence of blood. Further testing failed to reveal the presence of blood"* if he or she judged that the negative or inconclusive confirmatory test result was "*possibly because material is of limiting quantity".* In the alternative, the Analyst could simply state in the report that the test **"***revealed chemical indications for the presence of blood"* if the results of the confirmatory test were *"*inconclusive." This policy caused confusion because an inconclusive result was never defined, yet it persisted through January, 2003 when the confirmatory test series was phased out.

d. Failure to report the results of a confirmatory test that was "*negative", "no result" or "inconclusive*" could lead to violations of the Brady and/or North Carolina Discovery rules if the presence of blood was a central issue in deciding the guilt or innocence of the defendant and/or material to the preparation of a defense to charges brought.

4. No evidence was uncovered that SBI Laboratory policies, practices or training modules addressing report writing methods were ever subjected to legal review which could have identified circumstances that would produce reports which were technically and scientifically correct as to the results of the tests actually reported on, but which were nevertheless incomplete, unclear, and in some cases not truthful. (See Findings 5 and 6 below)

5. This review identified 36 instances in which the serology lab report stated that there were "*chemical indications for the presence of blood*", but further reported there was *"insufficient material*" to conduct additional tests, when in fact one or more confirmatory tests were conducted and results were recorded as negative or inconclusive in the lab notes. This language would lead a reader to conclude that, first, no confirmatory test had been conducted after the positive presumptive test, and, second, that blood was present when the more sensitive test indicated that the presence of blood could not be confirmed.

6. This review identified five instances where the final report over stated or misstated the results of the tests conducted.

7. In January, 2003 presumptive blood tests were still in use as tools for forensic crime scene processing and initial blood detection, but the series of confirmatory serology tests that included the Takayama test were replaced by DNA and Rapid Stain Identification (RSID) testing. As a result the serology reporting issues identified in this review were not found after 2003.

8. On January 1, 2008 the SBI began to implement an online electronic data base that contained all laboratory files, and on September 17, 2008 they began phasing in access to this data base for the District Attorney's Offices in the State. By March 25, 2010 the SBI had successfully implemented online web based access to laboratory files for every District Attorney's Office in North Carolina. This access was demonstrated to the reviewers and confirmation was obtained from the District Attorneys en masse at the annual District Attorney's conference in May, 2010 that the system was working.

9. No evidence was found that laboratory files or reports were concealed or evidence deliberately suppressed. Anyone with access to the lab notes could discover the discrepancies and omissions described in this report. Factors that contributed to the issues identified in this report include:

    a. The absence of any written policy guidance prior to 1997;
    b. Unclear and flawed policy guidance after 1997;
    c. Minimal legal training;
    d. Inadequate management oversight of reporting methods;
    e. The absence of any internal legal review of lab reporting procedures, practices and policies
    f. A mindset promoted by the Section Chief that the lab's customer was law enforcement and reported results should be tailored primarily for law enforcement's consumption.

10. In 2004 ASCLD/LAB International began phasing in a new program named the "ASCLD/LAB International ISO 17025 Program of Accreditation" that is based upon stringent standards implemented by the International Organization for Standardization (ISO). The foundation of the new accreditation program is ISO 17025 standards supplemented by forensic-specific requirements taken from the ASCLD/LAB legacy accreditation program. The ASCLD/LAB-International Accreditation Program established report writing standards which require that the results of "each test" be reported "accurately, clearly, unambiguously and objectively" and that appropriate qualifiers, test limitations and clear interpretative language be included in the report. This new accreditation became mandatory in April, 2009, however, the NC SBI laboratory is "grandfathered" (i.e. it is their option to continue using their old guidelines) under the legacy system until their next regularly scheduled accreditation review which will not occur until 2013.

RECOMMENDATIONS

1. That the SBI, in conjunction with each affected District Attorney's Office, conduct a detailed review of the cases identified in this report that contain Forensic Laboratory reports that met the following criteria: (a) the lab did not report, misreported the existence and results of confirmatory tests for the presence of blood that were negative, inconclusive or no result, (b) a defendant was accused or convicted of a crime, and (c) the defense was not provided the pertinent lab files. This review should determine whether action should be taken to notify any defendants potentially subjected to unjust convictions or otherwise adversely impacted as a result of the nondisclosure of the negative or inconclusive lab reports.

2. That the SBI ensure current and future laboratory personnel are sufficiently trained in constitutional and statutory discovery requirements, legal aspects of forensic science and the role of forensic laboratories as an objective reporter of facts to all components of the justice system. This effort should specifically dispel any belief that the SBI laboratory and its personnel serve to support investigating officers and prosecutors only.

3. That the SBI ensure a legal analysis is conducted of all its formal operating procedures as well as custom and actual practice relating to reporting of laboratory test results. This review should ensure that North Carolina prosecutors are placed in a position to fully comply with the letter and spirit of federal and state laws and case law regarding criminal discovery.

4. That the SBI Laboratory obtain the most current ALCSL/LAB International ISO 17025 accreditation at the earliest possible date.

5. That the SBI ensure that the entire contents of all lab files relating to criminal prosecutions are routinely provided on a timely basis to NC Prosecutors to afford them an opportunity to review the documents and provide them to Defense Attorneys in criminal prosecutions in accordance with relevant constitutional and statutory requirements. The current electronic system is an effective means to make these files available however a back up manual system combined with commensurate business continuity policies should be implemented to account for system malfunctions and other contingencies.

6. That the SBI consider automating historical laboratory files to facilitate electronic searches and discovery of laboratory files that currently exist in paper form only.

7. That the SBI post all non privileged SBI Laboratory policies and procedures on a public website so that the operations of the lab are transparent and accessible to the public. Such action will stimulate vigorous and healthy cross examinations and public debate of Lab tests and attendant procedures/policies.

8. That the SBI Laboratory develop, implement and publish a streamlined process by which prosecutors, defense attorneys, and citizens may bring potential lab errors or omissions and general feedback regarding the operation and performance of the SBI Forensic Laboratory to the attention to a designated Ombudsman. Aside from assisting quality control, the objective of such a program would be the early identification and correction of errors and the identification of potentially flawed policies, practices and procedures.

9. That the new SBI Director consider conducting a “spot audit” of the Laboratory DNA testing program using FBI Qualified DNA Auditor(s) to review and verify the results of a representative sample of recent DNA tests to reassure the public of the efficacy of current SBI Laboratory tests and procedures involving DNA tests. The Director should also consider the use of blind DNA proficiency testing in conjunction with its Quality Assurance Program.

10. That the SBI conduct an internal review of the circumstances identified in categories three and four in (see Appendix B) in which the results of confirmatory tests were overstated, incorrectly reported or tests were conducted with negative results despite a report stating no further tests were done. The inquiry should determine if these reports were a result of intentional action or, in the alternative stemmed from confusion over reporting methods or human error.

CONCLUSION

This report is not an indictment of the SBI Laboratory. This was a review of a subset of tests conducted by one Lab Section within a defined period of time. It was not a comprehensive review of all Sections and all tests conducted by the Lab. The catalyst for the review was the issues raised in the Taylor case and therefore the issues raised

in the Innocence Commission forum defined the scope of the inquiry. The tests that are examined in the bulk of this report are no longer in use.

The reviewers were given a free hand by the North Carolina Attorney General and, in the interest of transparency, were encouraged at every juncture to err in favor of inclusion of questionable cases and practices, even if the propriety of the practice was debatable. In the adversarial system of justice reasonable minds can and will differ on some of the issues and findings raised in this report, however the citizens of North Carolina have a right to expect accuracy, proficiency, objectivity, full transparency, and even excellence in the operations of their forensic laboratory. Above all, the laboratory must be viewed as a resource of the criminal justice system as a whole. It is within this spirit that the recommendations in this report are made.

APPENDIX A

In connection with this review the following Manuals were examined:

1. "State Bureau of Investigation Policy and Procedures Manual" effective April 1, 1981. Per Director Haywood R. Starling this manual was "intended for use by all Bureau employees";

2. "State Bureau of Investigation Policy Manual" effective November 1, 1991. Per Director Charles Dunn this was "procedures manual (s)" which was "in the process of being updated". The contents of the old "Policy Manual" "remained in effect until the procedure manual covering your division is issued in an updated form" ;

3. "State Bureau of Investigation Crime Laboratory Procedure Manual" effective April 30, 1993. This manual was "intended to set forth established methods for conducting Bureau affairs relating to the functions and responsibilities of the SBI Crime Laboratory Division". It was intended to be "in addition to" the SBI "Policy Manual" then in effect. .

4. "State Bureau of Investigation Crime Laboratory Procedures Manual" effective June 15, 1998. This manual was "part of the "Bureau's Policy and Procedure Manual System"

5. "NCSBI Crime Laboratory Safety Manual" effective November 1997.

6. “State Bureau of Investigation Policy and Procedure Manual”. This manual is also referred to as part of the “Bureau’s Policy and Procedure Manual System”

7. “Administrative Orders Manual, Forensic Biology Section” effective August 26, 1996. This manual was intended to be a repository for policies and procedures that are issued by Section level management between changes to permanent manuals or such time as they are rescinded.

8. “NCSBI Quality Assurance Program for the Serological and Biochemical Typing of Biological Materials” manual effective May 25, 1990. This is the earliest dated Quality Manual provided for review.

9. “NCSBI Quality Assurance Program for the DNA typing of Biological Material” manual effective June 1, 1991. This manual appears to be specific to the DNA Unit of the NCSBI “Serology Section”.

10. “NCSBI Molecular Genetics Section Quality Assurance Manual” effective August 15, 1996. This manual appears to apply to the entire Section. At this point traditional serological testing was being phased out and the section was renamed the “Molecular Genetics Section”.

11. Subsequent revisions of the “NCSBI Molecular Genetics Section Quality Assurance Manual” dated April 30, 1998; April 6, 1999; October 23, 2000; December 6, 2002; March 1, 2003; August 7th 2003; May 6, 2004; December 23, 2004; December 22, 2005; January 30, 2007; December 7, 2007; December 15, 2008, and October 12, 2009.

12. “NCSBI Serology Section Procedures Manual” effective July 31, 1985.

13. “NCSBI Molecular Genetics Section Body Fluid Identification Procedures” dated October 17, 1996; and revisions dated July 2 1999; December 4, 2002; and August 7, 2003.

14. NCSBI Forensic Biology Section Body Fluid Technical Procedures” effective December 10, 2004; and revisions dated July 23, 2008 and November 4, 2009.

15. “NCSBI Serology Section Training Manual” effective date believed to be 1989 to July 2, 1999.

16. The “SBI Evidence Manual” dated 1991. Page XI of this manual provides guidance to readers on how to interpret Laboratory reports.

17. Miscellaneous documents relating to a compilation of Laboratory reference material and document control policy with the forensic Biology Section contained in a Binder labeled “Miscellaneous Documents, Forensic Biology”.

18. “Sourcebook in Forensic Serology, Immunology and Biochemistry” published by the US department of Justice, National Institute of Justice dated August1983.

19. ASCLD/LAB Reports for the SBI Laboratory Accreditation Inspections for 1988, 1993, 1998, 2003 and 2009.

20. ASCLD/LAB Policy Manuals 1985; 1992;1997;2003;2005;2008;ISO 17025; ISO 17025 Supplemental and ISO Combined.

21. American Society of crime Laboratory Directors Laboratory Accreditation Board Manuals dated 1988, 2003 and 2005.

Summary of Specific SBI Policies and Procedures Relevant to Reporting Laboratory Test Results.

April 1989: 1985 – 1999 Laboratory Training Manual

> Phenolphthalein Training: The phenolphthalein test is a presumptive catalyst test for the detection of blood. ….. False positive reactions can occur. The literature reports that certain plants including horseradish, tomato, turnip and Jerusalem artichoke possess elevated levels of peroxidase which may give a positive reaction with phenolphthalein. ……. The literature also reports that bacteria which possess a high level of catalase activity may also give a false positive reaction. If a pink color appears after addition of phenolphthalein but before addition of hydrogen peroxide, then the presence of an oxidant is indicated. Any reaction that occurs 5 seconds after the addition of the hydrogen peroxide solution is a false reaction and should not be recorded.

1999 – 2002: *NCSBI Molecular Genetics Section Training Manual, Body Fluid Identification*

> **1.1.2** Phenolphthalein Test: The phenolphthalein test is a presumptive catalytic test for the presence of blood. …… This test is particularly useful because there are less known false positives than other presumptive tests. The literature reports that certain plants including horseradish, tomato, turnip, Jerusalem artichoke ……The literature also reports that bacteria which possess a high catalase activity may give a false positive reaction….. Metals and rust do not interfere with this testing. However, it may be slightly less sensitive than some other catalytic tests.

1.2 Takayama test (Confirmatory Testing) The Takayama test will confirm the presence of blood and is designed to be used in conjunction with presumptive testing for blood. …… A positive result is visualized microscopically by the formation of salmon colored rhomboidal or stellate crystals. The only materials that will give a positive reaction other than blood are commercially produced preparations of catalase and peroxidase, items not occurring in nature.

June 2001 – 2002: NCSBI Molecular Genetics Section Supplemental Training Manual, Blood Identification at Crime Scenes for Crime Search Specialists and Forensics Molecular Geneticists

Appendix III:

1. Bloodstain Identification:

1.1 Presumptive tests: Presumptive tests or catalytic tests for blood center on the erythrocyte portion of the formed elements…… This technique allows for a quick visual screening of blood but should not be judged as a confirmation of the presence of blood. Presumptive tests are designed to be used in conjunction with confirmatory tests for blood if enough of a sample is available.

1.1.1 Luminol: Luminol is a chemiluminescent presumptive test for the presence of blood. …. Luminol is employed when no visible blood is detected or other less sensitive presumptive tests have failed. It is also primarily used for large areas such as cars and houses. The analyst should be particularly aware that false positives may occur on purified vegetable peroxidases, some metals, bleach, and chemicals. Therefore, care should be taken in interpreting the results.

1.1.2 Phenolphthalein test: (same as above)

Appendix IV: Approved Technical Procedures

4. NOTE – Phenolphthalein is only a presumptive test for blood and can give reactions for substances other than blood.

Luminol:

3. NOTE – Luminol is only a presumptive test and can give a reaction for things other than blood.

4. Record only the results that give a positive reaction to both the phenolphthalein test and the luminol test.

2002 – August 2003: NCSBI Molecular Genetics Section, Training Manual, Body Fluid Identification

Appendix III

1.1.2 Phenolphthalein test: (same as above two manual cites)

1.2 Takayama test (Confirmatory Testing): (same as above two manual cites)

August 2002 – July 2008: NCSBI Molecular Genetics Section Training Manual – Body Fluid Identification, Revision 01

(Same as previous manual cites regarding Phenolphthalein and Takayama)

July 2008 – April 2010: NCSBI Forensic Biology Section Training Manual – Body Fluid Identification, Revision 03: (same as previous manual cites regarding Phenolphthalein and Takayama)

May 25, 1990: Quality Assurance (QA) Manual for Serological and Biological Typing of Biological Materials.

3.2.4 Guidelines for the proper recording of all analytical data.

Notes to document all tests performed on each item and those test results will be recorded in the permanent file of every case submitted for Serological and Biochemical analysis.

8.3.1 Report Writing

All items analyzed must be reported. When writing the report, the analyst must double-check his notes and the electrophoresis run sheets for accuracy in transcription. All reports will be prepared in accordance with existing Bureau policy.

8.3.2 Review of reports

Prior to issuance, all reports will be checked for scientific soundness and adherence to Bureau and Section policy by the Serology Supervisor or his designee.

June 1, 1991: QA Manual for DNA typing of Biological Material (superseded on October 25, 1993)

2.22 Requirements for individuals performing DNA analysis

(4) Successful completion of in-house training program which covers the following:

(4b) Documentation and reporting procedures.

8 Data Analysis and reporting

8.1 Independent analysis of data.

All data and autoradiograph will be reviewed by a second qualified DNA analyst. The reviewing analyst will initial the case notes. Both DNA analysts must agree on the interpretation of the data to be reported.

8.5.1 Report Writing

Lab reports will be issued on all cases received by the DNA unit and these reports will be prepared in accordance with existing Bureau policy. Prior to issuance of the report, the DNA analyst assigned to the case will have all data and conclusions independently verified by a second DNA analyst.

September 25, 1991: NCSBI Crime Laboratory Evidence Manual

V.3.0.0 Report Interpretation

If the results of analysis do not speak plainly for themselves, then a conclusion section may be added to the report. In this section, the analyst will explain how the results should be interpreted

August 15, 1996: NCSBI Molecular Genetics Section QA Manual

3.2.3 Storage of evidence, destruction and disposition of evidence

Any test results and all notes and documentation will be saved in the appropriate file as dictated by the laboratory and Bureau policy.

8.1 Independent Analysis of Data

All data, test results and reports will undergo a technical review by a second qualified analyst. The analyst conducting the technical review will sign the appropriate review sheet. Both analysts must agree on the interpretation of the data to be reported.

8.5.1 Report Writing

Lab reports will be issued on all cases and will be prepared in accordance with existing Bureau policy. In addition to findings and conclusions of the analyst……will be included.

October 17, 1996: NCSBI Molecular Genetics Section Body Fluid Identification Procedures

Luminol Test Methods

(3) Standards and Controls: Note: Luminol is only a presumptive test and can give a reaction for things other than blood.

(4) Procedure: Record only the results that give a positive reaction to both the phenolphthalein and the luminol test.

Takayama test methods:

3) A known dried blood stain should be used as the positive control. A piece of cotton cloth should be used as a negative control. These controls should be run daily and recorded in the laboratory notes.

September 8, 1997: NCSBI Molecular Genetics Section, Administrative Order 97 – ADM – 25, Body Fluid Identification Reporting Guidelines

3. Examination of _____(Item(s)____) revealed chemical indications for the presence of _____. This phrase will be used when a presumptive test for blood or saliva yields a positive result, but confirmatory tests yield inconclusive results or the material is of limiting quantity to do additional testing.

4. Examination of ____(Item(s)____) revealed the presence of ____) This phrase will be used when blood or human blood is identified.

July 2, 1999: NCSBI Molecular Genetics Section Body Fluid Identification Procedures

Phenolphthalein Procedures:

(4) Procedure: A positive reaction is indicated by the development of a pink color within 5 seconds. Reactions occurring after 5 seconds or before the addition of the hydrogen peroxide are inconclusive. NOTE – Phenolphthalein is only a presumptive test for blood and can give reactions for substances other than blood.

September 7, 1999: NCSBI Molecular Genetics Section Administrative Orders Manual, Order 97 – ADM – 25, Laboratory Report Format

3. Examination of _____(Item(s)___) revealed chemical indications for the presence of _____. This phrase will be used when a presumptive test for blood or saliva yields a positive result, but confirmatory tests yield inconclusive results or the material is of limiting quantity to do additional testing.

4. Examination of _____(Item(s)____) revealed the presence of_____. This phrase will be used when blood or human blood is identified.

October 23, 2000: NCSBI Molecular Genetics Section Technical Procedures QA Manual

11.1 Guidelines for the proper recording of all analytical data from casework. The following information will be recorded in the permanent file of every case submitted for analysis.

3) Notes to document all tests performed on each item and those test results.

(5) Any documentation or notes relevant to testing procedures.

11.3 Report Writing

Lab reports will be issued on all cases and will be prepared in accordance with existing Bureau policy using the Laboratory Information Management System. DNA reports will include:

11.3.5 Results and/or conclusions.

11.3.6 An interpretive statement (either quantitative or qualitative)

October 2000 (Revision #5): FBI DNA Quality Assurance Audit document checklist maintained with the above-cited 10/23/00 NCSBI QA Manual

11 Reports

11.1 Does the laboratory have and follow written procedures for taking and maintaining case notes to support the conclusions drawn in laboratory reports?

11.3 Discussion: The laboratory must generate sufficient documentation for each technical analysis to support the reported conclusions such that in the absence of the examiner/analyst who directed the assay, another qualified individual could evaluate and interpret the resulting data.

12 Reviews

12.1 Does the laboratory 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?

March 19, 2001: NCSBI Molecular Genetics Section Administrative Orders Manual, Order 97 – ADM – 25, Laboratory Report Format

3. Examination of _____(Item(s)_____) revealed chemical indications for the presence of _____) This phrase will be used when a presumptive test for saliva or blood yields a positive result. This statement alone will be used when there is no further testing to be performed on the possible blood stain.

4. Examination of _____(Item(s)_____) revealed chemical indications for the presence of _____). Further testing failed to confirm the presence of blood. This phrase will be used when a presumptive test for blood yields a positive result, but confirmatory tests yield inconclusive or no result, possibly because the material is of limiting quantity. NOTE – Obtaining a negative result, or no reaction on a Takayama test does not mean that blood isn't present, only that you failed to confirm the presence of blood.

June 13, 2001: NCSBI Molecular Genetics Section Administrative Orders Manual, Order 97 – ADM – 25, Laboratory Report Format

3. Examination of _____(Item(s)_____) revealed chemical indications for the presence of_____. This phrase will be used when a presumptive for blood yields a positive result, but confirmatory tests yield inconclusive results or the material is of limiting quantity to do additional testing.

4. Examination of _____(Item(s)_____) revealed chemical indications for the presence of_____). Further testing failed to confirm the presence of blood. This phrase will be used when a presumptive test for blood yields a positive result, but confirmatory tests yield inconclusive or no result, possibly because the material is of limiting quantity. NOTE – Obtaining a negative result, or no reaction on a Takayama test does not mean that blood isn't present, only that you failed to confirm the presence of blood.

November 22, 2001: NCSBI Molecular Genetics Section Body Fluid Technical procedures

Takayama Test

(4.7) A positive reaction will be indicated by pinkish-red rhomboid-shaped crystals.

December 3, 2002: NCSBI Molecular Genetics Section Quality Assurance Manual – Revision 00, Appendix I – Body Fluid Report Format from 97-ADM-16 and 0`1-ADM-23

1. To standardize report formats, the Body Fluid Section will use the following uniform phrases in Laboratory reports:

1.3 When a presumptive test for blood yields a positive result, but confirmatory tests yield inconclusive results or the material is of limiting quantity to do additional testing. "Examination of _____(Item(s) ___) revealed chemical indications for the presence of _____."

1.4 When a presumptive test for blood yields a positive result, bur confirmatory tests yield inconclusive or no result, possibly because the material is of limiting quantity. "Examination of _____(Item (s) ____) revealed chemical indications for the presence of _____. Further testing failed to confirm the presence of blood." NOTE Obtaining a negative result or no reaction on a Takayama test does not mean that blood isn't present, only that you failed to confirm the presence of blood.

July 23, 2008: (Revision 05) Body Fluid Identification SOP – Technical Procedures Manual: Body Fluid Identification

2 Blood Analysis

2.1 Kastle Meyer (Phenolphthalein Test): The Kastle Meyer Test is a presumptive test for blood and can give a reaction for substances other than blood.

2.1.2 Procedure: Perform the Kastle Meyer Test on any stains that visually appear to be blood even if blood analysis is not requested.

2.1.4 If blood examination is requested and the item does not appear to have any stains on it, the entire item must be examined using the Kastle Meyer Test to eliminate the chance that a small or weak bloodstain may have been missed unless latent or touch DNA examination has been requested or ridge detail is noted on this item and swabbing it would compromise possible prints or DNA. If a weak reaction is seen, an attempt must be made to localize the area where the positive reaction was noted.

2.4 Luminol Test: Luminol is a presumptive test for the presence of blood. A phenolphthalein test should also be run and a positive result should be obtained from the Phenolphthalein test and the Luminol test before a sample is noted as a chemical indication for blood.

January 15, 2009: Forensic **Biology** Section Administrative Order 09-PRO-01 – Wording change on reports for presumptive test

If a presumptive test for the presence of blood or semen is performed on a piece of evidence and no body fluid is detected, then the wording of the report will state the following: "Examination of the _____(Item___) failed to reveal chemical indications for the presence of semen/blood."

2. Examination of _____(Item(s) ___) failed to reveal chemical indications for the presence of _____. This phrase will be used when chemical (presumptive) tests for blood or semen yield negative results.

3. Examination of ____(Item(s) ___) gave chemical indications for the presence of blood. This phrase will be used when a presumptive test for blood yields a positive result and no further body fluid testing is performed.

4. Examination of _____(Item (s) ____) revealed chemical indications for the presence of blood. Further testing failed to reveal reactions consistent with the presence of human blood. This phrase will be used when a presumptive test for blood yields a positive result, but confirmatory tests yield inconclusive or negative results because the material is of limiting quantity, or is not of human origin.

5. Examination of ____(Item(s)___) gave reactions consistent with the presence of human blood. This phrase will be used when human blood is identified by an ABA card.

6. Examination of _____(Item(s)___) revealed the presence of human blood. This phrase will be used when human blood is identified by RSID.