APPLICATION OF LEAN SIX SIGMA PRINCIPLES TO THE FORENSIC BIOLOGY CASEWORK UNIT OF THE NORTH CAROLINA STATE CRIME LABORATORY

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In the recent past, the casework unit within the Forensic Biology Section of the North Carolina State Crime Laboratory accumulated a large inventory of un-worked forensic cases. This ultimately has led to a large amount of time between evidence submission to the Laboratory and case completion. The principles of Lean Six Sigma have been successfully applied in forensic settings in order to increase the overall efficiency of forensic laboratories. Sorensen Forensics, LLC, was hired as a consultant to teach selected members of the North Carolina State Crime Laboratory staff the principles of Lean Six Sigma over the course of six months. The project began at the end of January and concluded at the end of June, 2013. While the project is considered "complete" as far as instructional class time is concerned, the processes are continually being improved to make the Laboratory and Unit operate in the most efficient manner possible.

Lean Six Sigma is comprised of two principles, Lean and Six Sigma. The Lean concept involves the reduction of waste within a system of production. Six Sigma is a continuous cycle of improvement that is built around quality. The continuous cycle of improvement is referred to as the DMAIC cycle. To complete the DMAIC cycle, one has to **D**efine the problem, **M**easure the current process, **A**nalyze to investigate potential problems, **I**mprove the process, and **C**ontrol the process and ensure problems are corrected before they become defects.

In January of 2013, the casework unit of the Forensic Biology Section began evaluating the overall process and work flow of the unit. During the evaluation process, areas of waste and "bottlenecks" in the overall casework process were identified. Subsequently, Lean Six Sigma principles were applied in order to improve the efficiency of the casework process by reducing waste and alleviating the "bottlenecks". Due to implemented procedural changes, re-structuring, and scheduling within the unit, over the course of the six month project, the case review process has improved dramatically and casework production has increased when compared to the previous year. The continued application of Lean Six Sigma principles within the casework unit of the Forensic Biology section is expected to improve the overall efficiency of the unit on a continuing basis.