Technical Procedure for Balances

1.0 Purpose - This procedure specifies the required elements for the calibration and use of individual electronic balances.

2.0 Scope - This procedure applies to all electronic balances in the Latent Evidence units of the State Crime Laboratory.

3.0 Definitions

- **Calibration** – Checking or adjusting (by comparison with a standard) the accuracy of a measuring instrument. Calibrations are performed by approved service contractors for all balances in State Crime Laboratory Latent Evidence units.

4.0 Equipment, Materials and Reagents

4.1 Equipment

- Electronic Balances

4.2 Materials and Reagents

- Weigh Boats
- Latent Evidence Chemical Reagents

5.0 Procedure

5.1 Standards and Controls

5.1.1 New Balances

5.1.1.1 New balances shall be installed and leveled according to manufacturer's specifications. An external calibration shall be performed by an outside vendor prior to use.

5.1.1.1.1 All balance calibrations, maintenance, and repairs shall be conducted in accordance with the ISO/IEC 17025 requirements by an accredited calibration laboratory utilizing ANSI/ASTM Class 1 weights.

5.1.1.2 Records of vendor scope of accreditation shall be maintained by the North Carolina State Crime Laboratory.

5.1.1.3 Individual balance calibration records shall be retained in the individual Latent Evidence units.

5.2 Calibrations

5.2.1 Calibration for all Latent Evidence balances shall be done on a yearly basis by an approved ISO accredited outside vendor.

5.2.1.1 Yearly calibration documentation shall be retained in the individual Latent Evidence units.

5.2.1.2 Certificates of calibration issued by the approved ISO accredited outside vendor shall be maintained in individual unit records.

5.2.2 When a Latent Evidence balance has been placed out of service, correct operation shall be demonstrated after repair and at the next performed calibration. Until such time as the balance is calibrated by an approved vendor it shall not be used.

5.3 Calculations

5.3.1 Balances in Latent Evidence are used exclusively for the production of section approved chemical reagents. Apart from the instructions for mixing specific reagents, no additional calculations are required when utilizing a Latent Evidence balance.

5.4 Application of Procedure to Reagents

5.4.1 Turn balance on.

5.4.2 Ensure that the balance is clean and that the weighing table is clear of any debris.

5.4.3 Place the weigh boat onto the weighing table. Tare the balance.

5.4.4 Pour or scoop the required reagent into the weigh boat until the desired weight has been reached.

5.4.5 Upon completion of all measurements turn balance off.

5.5 Uncertainty of Measurement

5.5.1 Currently Latent Evidence does not utilize any electronic balance in a manner by which to procure a quantitative measurement that is essential to casework results

6.0 Limitations

6.1 Balances within Latent Evidence units are utilized to obtain approximate weight measurements of commercial chemicals for the preparation of evidence processing reagents. Additional quality control measures are in place to ensure that all reagents prepared work properly prior to and contemporaneously with being used on test items. As such, any deviation in as found/as left values from the annual calibration certificate that may occur as the result of normal use does not affect any Latent Evidence test result.

7.0 Safety – Make sure the balance is plugged in and not near a source of water.

8.0 References - Manufacturer's information and Operator Manual for each model of balance.

9.0 Records

- Certificates of Calibration for balances

10.0 Attachments – N/A

Revision History		
Effective Date	Version Number	Reason
01/19/2018	1	Original Document
02/01/2019	2	5.2.2 – Added calibration requirement. 5.4 – Added turning on/off. 6.1 - Amended document to include Limitations appropriate for Latent Evidence.