Technical Procedure for Balances

1.0 Purpose – This technical procedure shall be followed for the operation of the balances within the Trace Evidence Section.

2.0 Scope – This procedure applies to all balances located within the Trace Evidence Section.

3.0 Definitions – N/A

4.0 Equipment, Materials, and Reagents

- Mettler Toledo PB3002 Balance
- A&D Model No. HR-200 Analytical Balance
- Certified primary standard set of weights
- Secondary reference standard set of weights

5.0 Procedure

5.1 Annual Calibration

5.1.1 All balances are cleaned, serviced and calibrated annually by an outside vendor.

5.1.2 Service records shall be maintained with the balances.

5.2 Daily Performance Check

5.2.1 Each day that a Trace Evidence Section balance is used, its performance shall be checked using the secondary reference standard set of weights. If the balance is not being used, the daily check shall not be required.

5.2.2 Procedure

5.2.2.1 Turn on balance and allow it to warm up for approximately 30 minutes.

5.2.2.2 Remove any load from the balance pan and re-zero.

5.2.2.3 Weigh the 100 g, 10 g, 1 g, and 0.1 g reference weight standards.

5.2.2.4 Record the balance reading for each reference weight standard, date, and initials of employee performing the check in the log maintained with the balance.

5.2.3 Results of the Performance Check

5.2.3.1 The recorded weight shall be within the expanded uncertainty measurement as stated on the annual balance calibration certificate.

5.2.3.2 If results are outside these parameters, the balance shall not be used until all necessary steps have been taken to bring the balance into compliance.

These steps may include cleaning, leveling, taring, or contacting an approved service contractor.

5.2.3.3 Once the recorded weights meet the above stated criteria, the balance may be returned to service.

5.3 Performance Verification for New Instrument Set Up

5.3.1 New balances shall be installed by a certified engineer according to manufacturer guidelines.

5.3.2 The daily performance check shall be performed. Upon successful completion of the check, the balance may be used in casework.

5.4 Standards and Controls

5.4.1 Do not touch the reference standard weights with bare hands.

5.4.2 There are no special storage requirements for the reference standard weights.

5.4.3 Secondary Reference Standard Weight Verification

5.4.3.1 The set of weights maintained in the Trace Evidence Section is a secondary reference standard.

5.4.3.2 The 100 g, 10 g, 1 g, and 0.1 g weights of the secondary reference standard shall be checked annually against a certified primary standard set of weights using the analytical balance.

5.4.3.3 The weight measurements shall agree within the expanded uncertainty measurement as stated on the annual balance calibration certificate.

5.4.3.4 If the measurements fall outside the expanded uncertainty measurement weight range, the secondary reference standard set of weights shall be calibrated.

5.5 Maintenance

5.5.1 Maintenance performed on a balance shall be recorded in the log maintained with the balance and shall include the date and the initials of the employee performing the maintenance.

5.6 Sampling and Sample Selection – N/A

5.7 Calculations – N/A

5.8 Uncertainty of Measurement

5.8.1 The uncertainty measurement of the balance shall be determined as part of the annual calibration by the outside vendor.

6.0 Limitations – N/A

7.0 Safety – N/A

8.0 References

Mettler Toledo B-S/FACT line of balances, Operating Instructions.

A&D HR-SERIES Instruction Manual, Precision Electronic Balance, v.5.a.

9.0 Records

- Performance Check log.
- Maintenance log.
- Certificate of Calibration for the certified weights.
- Secondary Reference Standard Weight Verification.
- Balance Calibration Certificate

10.0 Attachments – N/A

Revision History		
Effective Date	Version Number	Reason
09/17/2012	1	Original ISO Document
09/30/2013	2	Added secondary standard weight verification section (5.4.3). Updated the remaining procedure accordingly. Edited acceptance criteria in 5.2.3.1. Added uncertainty of measurement for balance (5.8) and records for secondary reference standard weight verification and balance calibration certificate.