Document Title: Equipment Maintenance QC
Controlled: Yes, with red stamp present
Controlled By: Quality Manager

Prepared By: _____ Date: _____

Approved By: _____ Date: _____

A. PURPOSE:

To maintain proper working equipment.

B. RESPONSIBILITY:

Forensic Science Examiners 1 and 2 in the Forensic Biology Section. Ordering information is maintained in a log book in the Forensic Biology Section. For additional information, refer to the Equipment Inventory Appendix.

C. PROCEDURE:

1. Ovens
   a. Check the temperature of the oven thermometers weekly.

   b. The temperature is maintained between 35°C and 39°C.

   c. Temperature, date and initials are recorded on the appropriate Oven Equipment Log Sheet.

   d. If the temperature deviates $\pm$ 2°C, adjust the temperature according to manufacturer's instructions as needed and record on the appropriate Equipment Log Sheet.

   e. If temperature continues to deviate $\pm$ 2°C, remove from service until the problem is corrected and record on the appropriate Equipment Log Sheet.

   f. If the temperature is changed it is checked with a NIST traceable thermometer for that temperature before use.

2. Refrigerators and Freezers
   a. Check the temperatures of the refrigerators and freezers weekly.

   b. The refrigerator temperature must be maintained above freezing and no higher than 7°C.

   c. The freezer temperature must be maintained no higher than –10°C.

   d. Temperature, date and initials are recorded on the appropriate Equipment Log Sheet.

C. 2. e. If the temperature deviates from these ranges, adjust the temperature according to manufacturer's instructions as needed and record on the appropriate Refrigerator or Freezer Equipment Log Sheet.

f. If the temperature continues to deviate from these ranges, remove from service until the problem is corrected and record on the appropriate Refrigerator or Freezer Equipment Log Sheet.

3. Thermometers
   a. Check the thermometers from each unit yearly against a NIST traceable thermometer. The temperatures must read within ± 2°C of the NIST thermometer.
      aa. NIST freezer thermometer: -30°C-0°C
      bb. NIST refrigerator thermometer: -5°C-15°C
      cc. NIST oven thermometer: -20°C-110°C

   b. Place the thermometers with the appropriate NIST traceable thermometer as follows:
      aa. The freezer thermometers into the walk-in freezer.
      bb. The refrigerator thermometers into the walk-in refrigerator.
      cc. The oven thermometers into one (1) oven.
      dd. Leave the thermometers overnight.

   c. Date, initials and results are recorded on the appropriate Thermometer Equipment Log Sheet.

   d. If the temperature deviates from the range, remove the thermometer from service and replace. Record on the appropriate Thermometer Equipment Log Sheet.

   e. NIST traceable thermometers are stored in a designated cabinet at room temperature. Replace five (5) years from the manufacturer's initial calibration date.

4. Micropipets
   a. Check the measurements of each micropipet yearly.

   b. For each unit, weigh the smallest and the largest volumes dispensed with that particular model on the Top Loader balance. Repeat measurement 10 times for each volume tested and note the total weight according to the appropriate Micropipet Equipment Log Sheet.

   c. Date, initials and results are recorded on the appropriate Micropipet Equipment Log Sheet.

   d. If the unit does not meet the following specifications, make fine adjustments as needed according to the owner's manual or send the unit back to the manufacturer for service and record on the appropriate Micropipet Equipment Log Sheet.

C. 4. d. aa. 10µl micropipet ± 10% @ 1µl and 10µl

bb. 20µl micropipet ± 10% @ 2µl and 20µl

cc. 100µl micropipet ± 10% @10µl and ± 5% @ 100µl

dd. 200µl micropipet ± 10% @ 20µl and ± 5% @ 200µl

ee. 1000µl micropipet ± 5% @ 100µl and 1000µl

5. Alternate Light Sources
   a. Crime-lites
      aa. Check known stains (semen, saliva, urine and blood) weekly for fluorescence or stain detection under selected Crime-lite/wavelength. Note: Crime-lite(s) used less often than weekly may be checked before each use.

      bb. Date, sample, Crime-lite, initials and result are recorded on the appropriate Crime-Lite Equipment Log Sheet.

      cc. If stains are not fluorescent or visible under these Crime-lites/wavelength(s), remove from service until problem is corrected and record on the appropriate Crime-Lite Equipment Log Sheet.

   b. CrimeScope
      aa. Check known stains (semen, saliva and urine) before each use for fluorescence under selected wavelength(s).

      bb. Date of check, sample, wavelength, initials and result are recorded on the appropriate CrimeScope Equipment Log Sheet.

      cc. If stains are not fluorescent or visible under these wavelength(s), remove from service until problem is corrected and record on the appropriate CrimeScope Equipment Log Sheet.

6. Ultrasonic Bath
   a. Drain, clean bath and replace water quarterly or as needed.

      Fill the tank with distilled water one (1) inch from the top.

   b. Date and initials are recorded on the Ultrasonic Bath Equipment Log Sheet.

   c. Maintain water level in bath according to manufacturer's instructions.

   d. If bath fails to work according to manufacturer's instructions, remove from service until problem is corrected and record on the Ultrasonic Bath Equipment Log Sheet.

C. 7. Top Loader Balance
   a. Check the balance quarterly with the appropriate NIST traceable weights at: 80g, 50g,

20g, 10g, 5g and 1g.

b. Date, initials and results are recorded ~~in~~ on the Top Loader Balance Equipment Log Sheet.

c. If the weight deviates ± 2% of the actual weight, remove from service until the problem is corrected and record on the appropriate Equipment Log Sheet.

d. The Top Loader Balance is serviced yearly by an outside vendor and recorded on the equipment and on the Top Loader Balance Equipment Log Sheet.

8. The microscopes are serviced yearly by an outside vendor and recorded on the equipment and on the Microscope Equipment Log Sheet.

9. Hoods are serviced yearly by an outside vendor and recorded on the equipment.

10. All equipment that requires service by an outside vendor will be validated before it is returned to service and recorded on the appropriate equipment log sheet.

11. New equipment will be validated before use and recorded on the appropriate equipment log sheet (newly generated if needed). A memo will be generated by the Supervisor of the Forensic Biology Section, or designee, stating that it is acceptable for use and it's effective date.

D. REFERENCES:

1. Boekel Scientific. Boekel Incubator Operating Instructions.

2. Mettler Toledo. Operating Instructions Line of Balances.

3. Sears Kenmore. Refrigerator Owner's Guide.

4. Rainin Instrument CO. INC. Pipetmen Operating Instructions.

5. Rainin. Pipet-Lite Operating Instructions.

6. Foster + Freemen. Crime-lite Information Sheets.

7. Spex Forensics. Mini-CrimeScope Operation Manual v. 2.0.

8. Fisher Scientific. Operator's Manual Tabletop Ultrasonic Cleaners.

9. Traulsen. "N-Width" Reach in Refrigerator/Freezer Models/Self-Contained Owner's Manual.