EVIDENCE EXAMINATION AND SAMPLE COLLECTION GUIDELINES

1.1 PURPOSE

1.1.1 To provide guidelines for evidence examination and documentation in conjunction with GL-13 (General Evidence Handling).

1.1.2 To provide guidelines for the collection of body fluid stains and samples from areas of interest.

1.1.3 To provide guidelines for forwarding samples for DNA analysis or retention.

1.2 RESPONSIBILITY

Personnel qualified to perform Forensic Biology duties.

1.3 SAFETY

Use appropriate measures for the proper handling of biohazardous materials and hazardous chemicals according to GL-2 (Safety Manual).

1.4 DEFINITIONS/ABBREVIATIONS

1.4.1 LIMS: Laboratory Information Management System

1.4.2 PPE: Personal Protective Equipment

1.4.3 QRW(s): Quality Record Worksheet(s); Appendix 1

1.4.4 RFA: Request for Analysis Form

1.4.5 QC: Quality Control

1.4.6 CODIS: Combined DNA Index System

1.4.7 Wearer DNA: Refers to samples collected from areas of interest in association with an item that may have been worn.

1.5 GENERAL NOTES

1.5.1 Physical evidence will be examined, and serological tests will be performed based on the examiner's knowledge, training and experience according to the submitting agency requests, case information and the condition of the evidence.

1.5.2 All examinations are conducted macroscopically. Other types of examinations (i.e. microscopic or stereoscopic) will be recorded (along with the microscope(s)/ stereoscope(s) used) on the appropriate QRW(s) and specified in reports. See FB SOP-05 (Case Records and Reports).

1.5.3 If a suspect has been arrested, and DNA testing will consume a sample, there is a possible consumption issue. Consumption issues must be indicated as such in the evidence LIMS notes. A 'Consumption' request will be created for samples being forwarded for DNA testing.

Note: Samples collected for wearer are not considered a consumption issue.

1.5.4 Depending on the evidence type and amount of time necessary for examination, it is part of the normal process for some items being examined in Forensic Biology (FB) to remain on an examiner's workbench during the day. If possible, cover the evidence with bench paper when leaving the workstation. See GL-13 for additional information.

1.5.5 Evidence that is received wet should be removed from the package and air dried (in a hood whenever possible). Once dry, the evidence may be examined or re-packaged, sealed and stored until future examination.

1.5.6 Only one submission will be open at a time. Evidence submitted from multiple scenes will be processed in a manner separated by time and/or space.

1.5.7 For cases requested to be expedited when body fluid testing is warranted, samples may be forwarded for DNA analysis prior to serological testing. FB will simultaneously conduct serological testing on a remaining portion of the sample for the presence of body fluids.

1.5.8 Certain evidence submissions require specific testing and sample collection. Utilize the appropriate FB SOPs below for additional guidance:

- Sexual Assault Evidence Collection Kit Examination (FB SOP-02)
- Whole Blood Sample Preservation (FB SOP-07)
- Trace Evidence Collection / Hair-like fiber Examination (FB SOP-19)

- Serological testing (FB SOP-08, -11, -12, -13, -14, -15, -16)
- Autopsy Samples (FB SOP-06)
- Fingernail Samples (FB SOP-27)
- ML2-IR Crime-lite (FB SOP-28)
- POC Collection and Preservation (FB SOP-29)
- M-Vac® Sample Collection (FB SOP-30)

1.5.9. Extracts generated during serology testing are considered work product. These extracts are not sub-itemized.

1.5.10. For general information on proficiencies, see Appendix H (Proficiency Guidance).

1.6 CLEANING AND PERSONAL PROTECTIVE EQUIPMENT

1.6.1 Cleaning Utensils and Laboratory Area

1.6.1.1 Clean utensils and bench top supplies during use as needed and between each case and case submission. The appropriate disinfecting solution is described in FB SOP-21 (General Chemical and Reagent QC) and is followed by ethanol to ensure aseptic conditions. dH_2O may be used between the disinfecting solution and ethanol.

1.6.1.2 Containers used to soak/clean utensils in disinfecting solution, dH_2O and ethanol, are replaced weekly. The disinfecting solution, dH_2O and ethanol are replaced daily or more often, if necessary.

1.6.1.3 Clean camera and other electronic equipment during use as needed and between each case and case submission to ensure aseptic conditions. The appropriate disinfecting solution is described in FB SOP-21. Avoid the use of ethanol.

1.6.1.4 Clean bench top using the appropriate disinfecting solution described in FB SOP-21 and replace examination paper between each case/case submission or more often, as necessary, to ensure aseptic conditions.

1.6.2 Personal Protective Equipment

1.6.2.1 Examiners must wear lab coats, masks, gloves, disposable sleeves and hair nets while examining evidence.

1.6.2.2 When conducting microscope work for Sperm Hy-Liter the examiner must wear a lab coat, mask and gloves.

1.6.2.3 Examiners will wear protective eyewear when it is indicated to do so.

1.7 CASE ASSIGNMENTS AND EVIDENCE RETRIEVAL

1.7.1 Case Assignments - Generally, examiners will be notified of case assignments by a Forensic Biology Lead/Supervisor, Case Management, a Manager or through the LIMS computer system according to GL-4 (LIMS). When necessary, an examiner may self-assign casework.

1.7.2 Evidence Retrieval - Examiners will retrieve evidence from a secure location, Evidence Receiving or another examiner, through a secure transfer within the LIMS computer system according to GL-4 (LIMS).

1.8 REAGENTS

1.8.1 Only QC'd, unexpired reagents will be used for casework. This includes deionized water (dH_2O) for sample collection and testing as applicable.

1.8.2 The reagent lot numbers used during examination are recorded on the appropriate QRW(s) and/or the FB QR-09 (General Reagent Sheet). Additions made subsequent to the date on FB QR-09 will be dated and initialed.

1.8.3 An electronic reference containing reagent lot numbers and expiration dates will be maintained on the shared drive.

1.9 EVIDENCE PACKAGING

1.9.1 The package or barcode of each item examined must be initialed by the examiner.

1.9.2 Examiners will document submission packaging on QRW(s) as follows:

- Type of package (bag, envelope, etc.)
- Type of seal (tape, heat-sealed, etc.)
- Labeling – the examiner will ensure the packaging barcode and submitting agency number correspond appropriately. It is the examiner's responsibility to further document additional relevant information on the Submitting Agency label not found on the RFA. This includes item descriptions that are needed for CODIS eligibility.
- It is not typically necessary to document details such as precise address of occurrence, vehicle license/VIN number, etc.

1.9.3 Labeling discrepancies will be documented.

1.9.4 When possible, the Submitting Agency seals should remain intact.

1.10 EXAMINATION DOCUMENTATION

1.10.1 Note taking and documentation will be done on the appropriate QRW(s), based on evidence type and requested testing.

1.10.2 All QRWs will be initialed and dated and documentation will be completed contemporaneously to examination.

1.10.2.1 Additional examination and/or testing conducted on a subsequent day will be initialed and dated on the worksheet accordingly. It is not necessary to initial and date administrative-type additions, including but not limited to, page numbers and/or header information.

1.10.2.2 All pages containing photographs will include initials. In general, pages with photographs are not dated since the QRW(s) in use will have a reference to the attached images.

1.10.3 Simple, common evidence items that can be sufficiently described in the written examination notes do not need to be photographed.

1.10.4 All photographs and/or sketches will be included in the case file. No photographs will be deleted.

1.10.5 Photographs will include a scale that is visible in the frame. The scale used should be based on the item size. When practical, the scale will be in the same plane as the item. It is not necessary to include generic manufacturer information/labeling/other markings in photographs.

1.10.6 Notes recorded on evidence photographs will include:

- All screening test results (Acid phosphatase, o-Tolidine, Kastle-Meyer)
- Location(s) on the evidence from which sample(s) are collected

1.10.7 At a minimum, QRW(s) documentation should include:

- Evidence description
- General item tag or label information (brand/size)
- Examination, including no further examination (NFE) conducted
- Test results, including stains not tested (NT) and not tested further (NFT)
- Number of swabs used to collect sample and number of swabs retained/forwarded
- For collected body fluid stain(s)/staining: document original size; specify if portion retained, when applicable.
- If the amount forwarded for DNA testing is different than what is stated in 1.12.3.1, this must be specified.
- Description/disposition of sample(s) collected/sub-itemized and preserved for future testing
- Evidence disposition
- Evidence not examined at this time (NEATT)

1.11 GENERAL EXAMINATION NOTES

1.11.1 Evidence with multiple Unit requests will be handled according to GL-12, GL-13 and Appendices C (Latent Prints), D (Controlled Substances), E (Gun Shot Residue) or G (Guidance for Cellular Phones).

1.11.2 Mark evidence with the examiner's initials when possible. A label may be used on evidence that is difficult to mark. If there is a Latent Print request, use caution when marking with initials or mark with initials after the Latent Print examination has been completed.

1.11.3 Sample selection is conducted considering the substrate and the type/amount of sample present. Sample selection details will be included on the appropriate QRW(s). The details will not be included with the results stated in the report.

1.11.4 Body fluid samples and other samples from areas of interest will be collected based on the submitting agency requests, case information and type of evidence. Body fluid sample collection is also dependent on the size and quantity of stain(s). Specific examination guidance related to evidence or collection type is available below in section 1.13.

1.11.5 Body fluid samples will be collected separately from other areas of interest (i.e. a blood stain on a knife handle will be swabbed separately from a non-blood-like stain (non-BLS) or unstained areas on the handle).

1.11.6 An alternate light source should be used to locate body fluid stains. Observed stains will be marked on the evidence. Record the alternate light source used on the appropriate QRW(s). See FB SOP-28 (ML2-IR) for additional guidance.

1.11.7 When the evidence substrate allows, the evidence will be marked with the location of the body fluid sample collection. Screening test results may also be marked on the evidence. Other areas of interest collected will not be marked.

1.11.8 Multiple swabs collected from the same area and submitted as one item will be considered one sample. Items submitted for body fluid testing will be tested accordingly (i.e. a portion of each swab will be combined and tested as one sample).

- If all swabs in an item appear reddish-brown stained, it is only necessary to test a portion of 1 swab per item.

1.12 SAMPLE COLLECTION METHODS

1.12.1 **General:** Each sample will be collected and prepped before moving on to the next collection. See 1.14.1 (Sample Preparation).

- Note: For larger cases, it is acceptable to collect samples over multiple days before prepping. However, the swabs must be prepped one at a time according to 1.14.1.

1.12.2 Swabbing: Swabbing is typically used for sample collection from areas of interest or to collect a body fluid stain from a non-absorbent surface.

1.12.2.1 Sterile swabs and dH_2O will be used for swabbing samples.

1.12.2.2 In general, 1-2 swabs will be used for collection based on collection area size and substrate.

- Up to 2 swabs may be placed in a single tube for DNA.

1.12.2.3 When an area is swabbed with the intention of separating the swabs (i.e. retaining half and sending half for DNA analysis), the swabs must be collected simultaneously.

1.12.2.4 Moisten the appropriate number of swabs with dH_2O. Swab the area while rotating the swabs to ensure all sides contact the target area. If an item has been superglued, then swab vigorously when collecting the sample.

1.12.3 Cutting: Cutting is typically utilized to collect a body fluid stain from an absorbent surface.

1.12.3.1 The cutting size collected and/or forwarded to DNA will depend on the body fluid type and condition.

- Approximately 0.5 cm^2 blood cuttings will be forwarded to DNA.
- Approximately 1.0 cm^2 will be forwarded for other body fluid types.

1.12.4 Scraping: If necessary, a stain or debris may be scraped from a surface (typically non-absorbent) using a sterile scalpel. Document the size of the sample collection area.

1.12.5 M-Vac®: Sample collection using the M-Vac® is conducted on a case-by-case basis, and/or upon request by an outside agency. See FB SOP-30 (M-Vac® Sample Collection) for further information.

1.12.6 Samples submitted in liquid form will be handled according to Appendix I (Liquid Samples).

1.13 EVIDENCE EXAMINATION AND FORWARDING GUIDELINES

1.13.1 General

1.13.1.1 For evidence assigned an LP request, sample collection will vary based on whether BLS is present or not. See Appendix C for additional guidance.

1.13.1.2 If a single submission contains more than two swabs in multiple internal packages, prepare the DNA and any retained samples in a manner that ensures a sample from each carton/packet of the same location is taken and combined in accordance with 1.11.8 above.

- This may not be applicable for heavy reddish-brown stained swabs.

1.13.2 Direct-to-DNA/Body Fluid Testing (sexual assault-type evidence)

1.13.2.1 General

1.13.2.1.1 Swabs submitted from an outside agency or swabbings generated internally that have the potential for the presence of a body fluid(s), will typically be forwarded for direct-to-DNA testing.

- Body fluid testing for the presence of semen and/or saliva may be considered on a case-by-case basis.
- Swabs/swabbings with suspected urine and/or fecal material will be forwarded for direct-to-DNA testing according to 1.13.1.2 above.

1.13.2.1.2 Other evidence (including but not limited to clothing, bedding, towels, etc) will not be considered for direct-to-DNA testing. These items will be tested for semen, saliva and/or blood according to case information and 1.13.2.3 below.

1.13.2.1.3 See sections 1.13.10, 1.13.11 and 1.13.12 below and SOP-02 for additional information.

1.13.2.2 Direct-to-DNA

1.13.2.2.1 Condoms

- In general, 2 swabs will be used to collect a separate sample from the condom interior and exterior. 3 swabs may be used for collection if fluid is observed.

- If 2 swabs are collected, prepare 1.5 swabs for DNA (differential extraction) and retain 0.5 swab for future body fluid testing.
- If 3 swabs are collected, prepare 2 swabs for DNA (differential extraction) and retain 1 swab for future body fluid testing.

1.13.2.2.2 Swabs

- When penile contact is indicated, swabs will be prepped and forwarded to DNA for a differential extraction (1.13.2.2.2.1).
- For 'unsure' scenarios, swabs will also be prepped and forwarded to DNA for a differential extraction.
- When oral and/or digital contact is indicated, swabs will be prepped and forwarded to DNA for a non-differential extraction (1.13.2.2.2.1). If **any** penile contact is also indicated, the sample will proceed as a differential extraction.

1.13.2.2.2.1 Prepping swabs

- If there is the potential for the presence of semen and/or saliva, a sample must be retained for possible body fluid testing.
- Prepare the DNA and retained samples in accordance with 1.13.1.2. Examples:
  - Two cartons received, containing two swabs each; Prepare 2 swabs (1 whole swab from each) for DNA and retain two swabs.
  - Two total swabs received; Prepare ~1.5 swabs for DNA and retain ~0.5 swab.
  - One swab is received; Prepare ~2/3 swab for DNA and retain ~1/3.
- If a sample is forwarded to DNA for digital contact only (no potential body fluid), a maximum of 2 swabs will be utilized for DNA extraction.

1.13.2.3 Body Fluid testing

1.13.2.3.1 If semen testing is warranted, acid phosphatase testing will be conducted prior to extraction according to FB SOP-12 (Screening Test for Semen).

1.13.2.3.2 If reddish-brown stains are observed, blood screening test(s) should be conducted prior to extraction according to 1.11.8 and FB SOP-08 (Screening Tests for Blood).

1.13.2.3.3 Extraction Guidelines:

1.13.2.3.3.1 Swabs

- In general, combine ~1/4 of each swab per item to equal a total of one half to one whole swab according to the number of swabs present.
- If one (1) swab is present, it is acceptable to extract ~1/3 of the swab and forward the remaining ~2/3 for DNA analysis, as warranted.
- If greater than four (4) swabs are present, then reduce the portion removed from each swab accordingly to total one whole swab.

1.13.2.3.3.2 Other evidence

- An appropriately sized cutting(s) will be removed from each stain(s) to be extracted.

1.13.2.3.3.3 Sample(s) will be extracted according to FB SOP-13 (Extraction of Samples for Semen).

1.13.2.3.4 A smear will be made from the extract and microscopically examined for the identification of spermatozoa according to FB SOP-14 (Identification of Spermatozoa).

1.13.2.3.5 The extract can then be tested for p30 and amylase according to FB SOP-15 (RIA for Semen) and SOP-16 (Test for Amylase).

1.13.2.3.6 If only amylase testing is indicated, test according to FB SOP-16 and:

- For swabs, a portion of each will be tested as outlined in 1.11.8.
- For other evidence, an appropriately sized cutting(s) will be removed from each stain(s) to be tested.

1.13.3 Wearer DNA : Use 1-2 swabs to collect a wearer sample as follows. If items appear new or gently worn, a second area may be collected. Typically, one sample per item will be forwarded for DNA testing.

Any additional samples collected will be retained.

- Shirt, jacket, etc.: One sample will be collected from the interior collar. A second sample may be collected from the interior cuffs.

- Hat: One sample will be collected from the interior rim. If present, a second sample may be collected from the brim.
- Pants, underpants, etc.: One sample will be collected from the interior waistband.
- Gloves, footwear: One sample will be collected from the interior of each item. If the glove interior cannot be determined, collect a sample from each, the interior and exterior, as it was received and forward both to DNA.

1.13.4 Underpants, pants, etc.: If necessary, collect a wearer sample according to 1.13.3 above. Based on the case scenario, avoiding stains, collect a sample using 1-2 swabs from each of the relevant areas below:

- Exterior hip and waistband areas
- Interior front panel and crotch areas
- Interior back panel and crotch areas

These samples will be forwarded based on case scenario and serological results.

1.13.5 Knife: Collect a sample from the handle, avoiding any BLS, using 1-2 swabs. Based on the case scenario, collect a sample from the blade using 1-2 swabs. Forward collected sample(s) to DNA.

1.13.6 Cigarette butts/other smokable items: Cut approximately 1/4" x 1/8" off of the filter end or approximately 1/2" x 1/4" off the unfiltered unburnt end and forward the collected sample to DNA. See Figures 1 and 2.

Figure 1:

Figure 2:

1.13.6.1 If the item is unsmoked or contains a mouthpiece, collect a sample with 1-2 swabs and forward to DNA.

1.13.7 Drinking Containers:

- One sample will be collected from the exterior mouth opening and interior cap (if present) using 1-2 swabs and forwarded to DNA.
- If it appears that the bottle hasn't been opened or drank from then a sample will be collected from the exterior body and cap areas using 1-2 swabs and forwarded to DNA.

1.13.8 Paper (notes, cards, etc.): Use 1-2 swabs to collect one sample from the overall area and forward to DNA.

1.13.9 Envelopes/Stamps: Sample collection from envelopes and/or stamps will be conducted according to Appendix A.

1.13.10 Bloodstains (positive screening and/or identification results):

- See 1.11.8 for testing of reddish-brown stained swabs.
- Blood screening test(s) will be conducted according to FB SOP-08 (Screening Tests for Blood).
- Identification test(s) for human blood are typically considered for Homicide cases only and conducted according to FB SOP-11 (RIAs for Blood).
- Stain/staining: Cut ~0.5cm^2 and forward to DNA.
- Heavily stained swab or swabbing: Forward ~½ swab to DNA. Retain the remaining half.
- Light/dilute stained swab: Forward a minimum of 1 swab to DNA. Retain any remaining.
- If the case scenario indicates that a sample was previously tested with a field test by the submitting agency, in-house serological testing is typically omitted and the sample is forwarded directly to DNA. Note agency field testing in LIMS.
- See 1.13.1 for other general information.

1.13.11 Semen: See 1.11.8 regarding combined swab testing.

- ≥ 2+ sperm: Forward a total of 1 swab to DNA.
- 1+ sperm/(1) spermatozoon/p30 positive: Forward up to 2 total swabs to DNA.
- Forward ~1cm^2 of sperm/semen positive non-swab cuttings to DNA.
- Retain any remaining sample.
- See Appendix B for smear sample collection guidance.
- See 1.13.2 for serological testing information.

1.13.12 Amylase: See 1.11.8 regarding combined swab testing.

- Strong positive: Forward a total of 1 swab to DNA.
- Positive / weak / very weak positive: Forward up to 2 total swabs to DNA.
- Forward ~1cm^2 of amylase positive non-swab cuttings to DNA.
- Retain any remaining sample.
- See 1.13.2 for serological testing information.

1.13.13 Firearms (FA) & Peripherals: See Appendix F for detailed photographs and depictions of the firearms and peripherals described below.

- Photograph the firearm showing both sides of the frame. If necessary, include the manufacturer and model number. Written documentation of the serial number is acceptable.
- The entire firearm will be swabbed with 2 swabs, excluding the trigger only for homicides, unless otherwise approved by a Deputy Director. **Forward 2 swabs to DNA.**
- The trigger will be a separate swabbing for homicides only, unless otherwise approved by a Deputy Director. Use 1 swab to collect a sample from the trigger and **retain it**. Forwarding to DNA may be considered on a case-by-case basis.

1.13.13.1 If a magazine is submitted with a firearm or submitted separately, use 1-2 swabs to collect and **retain it.** Forwarding to DNA may be considered on a case-by-case basis.

1.13.13.2 Cartridges / Cartridge Casings (fired and unfired) / Bullets / Projectiles examined:

- In general, cartridge(s) are only swabbed if they have not been previously unloaded from the magazine, if there is specific information they were handled, and/or if the submitting agency requests it.
- Document the caliber and manufacturer head stamp information of cartridges/casings via photograph or on QRW(s).
- Use 1 swab to collect a sample from all exterior surfaces. If more than one item is present, collect one sample from all items using 1-2 swabs. Samples will be forwarded to DNA based on case scenario and examiner discretion.
- A sample is only collected from fired cartridge casings (FCC) if the request explicitly indicates the FCC was handled. See FB/DNA SOP-01 (Collection of DNA from FCC) for guidance.

- A sample is only collected from fired bullets/projectiles if requested and approved by management.

1.14 POST-EXAMINATION

1.14.1 Sample Preparation:

- Swab cotton will be removed from the stick and stains will be cut to the appropriate size.
- Samples being forwarded to DNA will be placed in a sterile plastic tube labeled with case number, item number and initials.
- Swab(s) or portion(s) of swab(s) retained for future body fluid testing will be snapped off into a tube.
- Note: Swabs will be prepped one at a time regardless of whether they are collected in one day or over multiple days. One tube will be labeled at a time and the sample prepped before moving on to the next sample.

1.14.2 The samples will be sub-itemized in LIMS according to GL-4 and GL-13. Sub-itemization will occur as contemporaneously to the examination as possible.

- For evidence submitted as swabs:
  - Include the location/description in quotes and utilize the term 'swab' in the item description (i.e. Swab - "steering wheel")
- Sub-items swabbed by the examiner will utilize the term 'swabbing' in the description (i.e. Swabbing - mouth of bottle).
- Stain(s)/staining collected by the examiner will utilize the term 'stain' or 'staining' in the description (i.e. Stain - interior crotch of underpants). "Cutting" or "Swabbing" will be added to the sub-item LIMS notes.
  - Other samples cut by the examiner may utilize the term 'portion' in the description (i.e. Portion of unburnt end of "roach"). "Cutting" will be added to the sub-item LIMS notes.
- Sub-item descriptions may be simplified, abbreviated versions of the parent description if done in a manner that maintains unique item identification.
- It is not necessary to record the number of swabs or cutting size in LIMS.

1.14.3 Samples should be immediately transferred electronically to the appropriate storage location. The LIMS transfer sheet will be printed for retained and consumption samples only.

- Samples may remain in an examiner's custody (non-shared evidence locker) or an 'In Progress' location as described in GL-13 if additional work is being done on the case that extends beyond the normal workday. In these instances, the below steps will be conducted at a later time.

1.14.4 Samples with a consumption issue or samples/items being retained will be packaged and labeled appropriately. These samples will be verified against the appropriate transfer sheet. A second examiner, however titled, will verify labeling as well as the applicable contents.

Verifiers will initial and date the transfer sheet in agreement. In the event of a labeling discrepancy, the items will be corrected, and a Lead or Manager will be notified.

- Once verified, the packaging will be sealed and the seal initialed by the examiner prior to physical transfer to the appropriate storage location.

1.14.5 Non-consumption samples being forwarded for DNA analysis are not verified at this time. These samples will physically be placed directly into a designated storage location for pending DNA extractions and added to the appropriate DNA batch spreadsheet.

1.14.6 The transfer of samples from laboratory cases which were opened prior to 1998 and not in the LIMS system will be recorded on the Evidence Transfer Sheet (FBQR-11) located in Appendix 1 (QMS).

1.15 APPENDIX

1.15.1 Appendix A: Envelopes/Stamps

1.15.1.1 In general, due to excessive handling during mail transport, no sample will be collected from the exterior of the envelope or stamp. Sample collection will focus on adhesive areas of each.

1.15.1.2 Collection from an envelope will be as follows:

- Using caution to avoid tearing, begin at one corner of the envelope and gently attempt to pry the flap apart from the envelope with forceps.

- If the flap does not separate easily, STOP and proceed to 1.15.1.3 for applying steam.
- If the flap separates easily and cleanly, continue until it is completely separated from the envelope.

- Collect a sample from the adhesive area of both surfaces using 1-2 swabs. Forward the sample to DNA.

1.15.1.3 Applying Steam

- In a hood, fill a 250ml beaker with approximately 200ml dH_2O and bring to a boil. Note: Add more dH_2O to the beaker as evaporation occurs.
- Beginning at one end of the envelope, hold the envelope flap approximately 1" above the steam for approximately 5 minutes.
  - Use caution not to touch the envelope to the beaker.
- Remove the envelope from the steam. Using forceps, gently and slowly attempt to pry apart the flap in the steamed area, avoid tearing. If the flap begins to separate from the envelope continue to gently pry it apart until the flap becomes stiff as it dries and will no longer separate.
- Repeat steps above in the next area of the flap until it is completely separated. Note: Some envelopes may require numerous applications of steam and increased exposure time (up to ~10 minutes at a time to the point of visible dampness, do not allow the envelope to become saturated). Use extra caution to avoid tearing.
- Collect a sample from the adhesive area of both surfaces using 1-2 swabs. Forward the sample to DNA.
- If unable to separate the flap from the envelope, collect a cutting measuring approximately 4cm x 1cm in size along the adhesive area of the flap, including the envelope layer. Forward half of the cutting to DNA and retain the remainder.

1.15.1.4 When necessary, stamps will be removed according to above, with the following exceptions:

- A sample will be collected from the adhesive area of both surfaces using 1 swab (whether steam is applied or not). Don't forward to DNA initially, retain.
- If unable to remove the stamp, it will be collected by cutting through both layers. Don't forward to DNA initially, retain.

1.15.1.5 Record the lot # of the dH2O used to collect the sample(s) and also the dH2O used for steaming, when necessary, on the appropriate QRW(s).

1.15.2 Appendix B: Smear Coverslip Removal

1.15.2.1. Photograph the slide as received.

1.15.2.2. Conduct a microscopical examination of the smear for cellular material. It is not necessary to search the entire smear.

- Record the result and microscope(s) used on the appropriate quality record worksheet.
- If an intact spermatozoon is identified, a second Forensic Biology (FB) analyst will confirm this identification, when necessary, and initial the appropriate quality record worksheet.

1.15.2.3 For smear(s) stained with Sperm Hy-Liter, use acetone to remove the nail polish from the cover slip by placing acetone on a swab and rubbing off the nail polish.

1.15.2.4 Place the slide in the freezer for 5 to 15 minutes.

1.15.2.5 Remove the slide and allow to thaw, preferably at 37°C.

1.15.2.6 While wearing eye protection, insert a clean blade under one (1) edge of the cover slip and gently pry it off the slide. Use caution since the coverslip may break into pieces when removing.

1.15.2.7 If needed, repeat the freeze-thaw cycle to aid in the removal of the cover slip.

1.15.2.8 Once the cover slip is removed, use 1-2 swabs (plastic handles) moistened with dH2O to collect the smear off of the slide. Additional swabs may be used to collect any remaining smear.

1.15.2.9 If unable to swab the smear off the slide, the smear can be removed by scraping it from the slide. Use a clean blade and collect the scrapings with 1-2 swabs moistened with dH2O.

1.15.2.10 Photograph the slide after the smear has been collected.

1.15.3 Appendix C: Evidence with a Latent Print Request

1.15.3.1 Evidence Previously Examined by the Latent Print Unit

- Examiners will swab the entire surface or area of interest, as one sample, simultaneously using 1-2 swabs.
- LP designated areas will not be considered for individual collection.
- Evaluate on a case-by-case basis.

1.15.3.2 Evidence with BLS and a Latent Print Request

1.15.3.2.1 If there is information from the Submitting Agency of BLS on an item, then the item will go to FB first.

- If ridge-like-detail in BLS is observed by FB, then LP will be contacted to determine if serological testing may be conducted prior to LP processing.
  - Once determined, it will be documented on the appropriate FB QRW(s), and initialed/dated by the LP examiner consulted with.
  - It should be noted that if a BLS will be tested and collected prior to LP processing, then the FB examiner should test and collect the BLS from the heaviest area to avoid interfering with any latent prints that may be present.
- If forwarded to LP first and a blood enhancement reagent is used, then only KM testing will be conducted upon return to FB.

1.15.3.2.2 If there is no information from the Submitting Agency of BLS on an item, then the item will go to LP first.

- If BLS is observed on the item by LP, then FB will be contacted to determine if it should be forwarded to FB prior to LP processing.
- Once determined, it will be documented on the appropriate LP QRW(s), and initialed/dated by the FB examiner consulted with.

1.15.3.3 If a Submitting Agency has used Amido Black on the evidence being submitted, then only KM testing will be conducted by FB.

1.15.3.4. If a Submitting Agency has used any reagent other than Amido Black on the evidence being submitted, the Deputy Director, Assistant Director and/or designee will be notified immediately.

1.15.3.5 LP Triage: Limited LP processing will be conducted by FB according to LP SOP 02 (Appendix 1 Latent Print Processing), followed by FB examination.

1.15.4 Appendix D: Evidence with a Controlled Substance

1.15.4.1 General

- This Appendix is a guideline for cases with a Controlled Substance (CS) request and/or if a potential controlled substance is present in an amount greater than a residue.
- It is not necessary to have a second examiner witness the opening and closing of the evidence packaging in order to verify the contents.
- An analyst from the CS Unit will be notified in the event of an issue or evidence discrepancy.
- If a potential controlled substance of any quantity is unexpectedly observed during the examination of any evidence, at any time, the CS Unit will be notified immediately.
  - The Case Management Unit will also be notified, see GL-12 (Evidence Receiving) for additional information.

1.15.4.2 Workflow (bundles)

1.15.4.2.1 CS evidence will be transferred to FB from a CS examiner.

- If weighing evidence is necessary per the CS Unit, evidence will first be weighed in a FB lab space by a CS examiner before transfer to the FB examiner.
  - Both FB and CS examiners will maintain their own QRW(s) and will work together on necessary photo-documentation.
  - CS examiner will open the package and count bundles with FB.
  - CS examiner will determine gross weight in disinfected container.
  - Evidence will be transferred to the FB examiner.

1.15.4.2.2 Examination

- Each group of bundles to be swabbed will be further sub-itemized (see below examples).

- Glassine bags with different stamps/colors will be categorized based on similar appearance and sub-itemized separately.
- If loose glassine bags are present and will be swabbed, then this group will be sub-itemized separately.
  - Swab up to 10 glassine bags as 1 sample.
- Any remaining bundles or loose glassine bags (not swabbed) within these categories will not be separately sub-itemized.
  - If there is no CS request, these categories will be separately sub-itemized for FB purposes (*see italicized examples below*).
- In general, samples will be collected according to the number of bundles present:
  - ~1 swab per bundle
  - 1-20: 1 sample (2 swabs) from 2 bundles
  - 21-40: 2 samples (2 swabs each) from 4 bundles
  - 41-60: 3 samples (2 swabs each) from 6 bundles
  - 61-80: 4 samples (2 swabs each) from 8 bundles
  - 81-100: 5 samples (2 swabs each) from 10 bundles
  - > 100: 6 samples (2 swabs each) from 12 bundles
  - When applicable, apply to each of the similar stamp/color/loose glassine bag sub-items.
- Upon completion of sample collection, groups of swabbed bundles will be placed in separate, appropriately labeled packaging.
- Rubber bands will be left intact by FB.
- The FB examiner will repackage and seal the evidence. The seal will be initialed and dated.
- The evidence will be transferred back to the CS Unit for further analysis or return to the Submitting Agency.
- It is acceptable for CS to remove the rubber bands and weigh as one, post FB collection.

1.15.4.2.3 Examples of sub-itemization

- <u>Example #1</u> (submission #1 contains PB with (25) bundles; the PB is swabbed <u>after</u> the bundles)

001-001: Plastic Bag containing item 001-001-01
001-001-01: (25) bundles of glassine bags
001-001-01-01: (2) bundles of glassine bags
001-001-01-01-01: Swabbing of (2) bundles of glassine bags
001-001-01-02: (2) bundles of glassine bags

001-001-01-02-01: Swabbing of (2) bundles of glassine bags
001-001-01-03: (21) remaining bundles of glassine bags
001-001-02: Swabbing - plastic bag containing item 001-001-01

- Example #2 (submission #1 contains PB with (25) bundles; the PB is swabbed before the bundles)

001-001: Plastic Bag containing item 001-001-02
001-001-01: Swabbing - plastic bag containing item 001-001-02
001-001-02: (25) bundles of glassine bags
001-001-02-01: (2) bundles of glassine bags
001-001-02-01-01: Swabbing of (2) bundles of glassine bags
001-001-02-02: (2) bundles of glassine bags
001-001-02-02-01: Swabbing of (2) bundles of glassine bags
001-001-02-03: (21) remaining bundles of glassine bags

- Example #3 (submission #1 contains PB with (100) bundles; the PB is swabbed before the bundles)

001-001: Plastic Bag containing item 001-001-02
001-001-01: Swabbing - plastic bag containing item 001-001-02
001-001-02: (100) bundles of glassine bags
001-001-02-01: (2) bundles of glassine bags
001-001-02-01-01: Swabbing of (2) bundles of glassine bags
001-001-02-02: (2) bundles of glassine bags
001-001-02-02-01: Swabbing of (2) bundles of glassine bags
001-001-02-03: (2) bundles of glassine bags
001-001-02-03-01: Swabbing of (2) bundles of glassine bags
001-001-02-04: (2) bundles of glassine bags
001-001-02-04-01: Swabbing of (2) bundles of glassine bags
001-001-02-05: (2) bundles of glassine bags
001-001-02-05-01: Swabbing of (2) bundles of glassine bags
001-001-02-06: (90) remaining bundles of glassine bags

1.15.4.3 Workflow (other CS evidence types)

- CS evidence will be transferred to FB from a CS examiner.
- If there is a CS request, unexamined contents will not be separately sub-itemized.
- If there is no CS request, unexamined contents will be separately sub-itemized for FB purposes (*see italicized example below*).

1.15.4.3.1 Examples of sub-itemization

- Example #1 (submission #1 contains PB with white substance):
  001-001: Plastic Bag containing white substance
  001-001-01: Swabbing - plastic bag containing white substance

- Example #2 (submission #1 contains PB with (2) PBs with white pills):
  001-001: Plastic bag containing items 001-001-01 and 001-001-02
  001-001-01: (1) plastic bag containing white pills
  001-001-01-01: Swabbing - (1) plastic bag containing white pills
  001-001-02: (1) plastic bag containing white pills
  001-001-02-01: Swabbing - (1) plastic bag containing white pills
- Example #3 (submission #1 contains (10) marijuana cigarettes):
  001-001: (10) marijuana cigarettes
  001-001-01: (1) marijuana cigarette
  001-001-01-01: Portion from unburnt end of marijuana cigarette
  001-001-02: (1) marijuana cigarette
  001-001-02-01: Portion from unburnt end of marijuana cigarette
  001-001-03: (8) remaining marijuana cigarettes

1.15.5 Appendix E: Gun Shot Residue

1.15.5.1 If there is a Gun Shot Residue (GSR) request, the Chemistry Unit may be notified prior to the FB examination and examination efforts may be coordinated.

1.15.5.2 It will be the responsibility of the Chemistry Unit to collect the appropriate samples. Such sample collection will be conducted by appropriately trained analysts, according to the needs of and relevant procedures within the Chemistry Unit.

1.15.5.3 The sample collection of evidence by the Chemistry Unit (or other unit, as appropriate) may occur at the same time as the Forensic Biology examination.
If the evidence is being simultaneously examined in the FB Unit:

- The examiner from the Chemistry Unit will temporarily transfer the evidence into their custody in LIMS while in the presence of the FB examiner.

- The chemistry analyst will collect and sub-itemize the sample(s) and then transfer the evidence back into the custody of the FB examiner

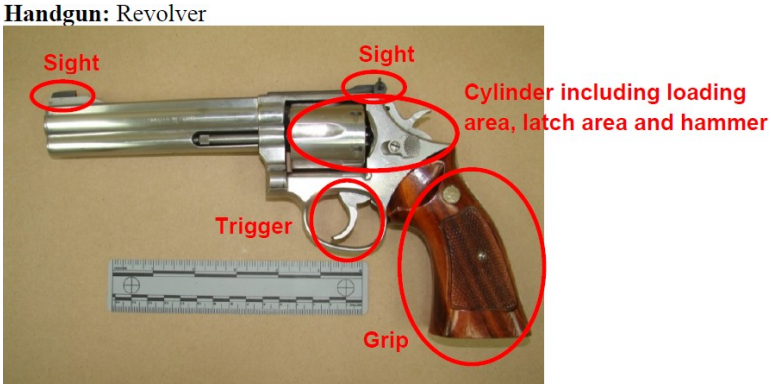
1.15.6 Appendix F: Firearm Photo-documentation

1.15.6.1 Firearm photographed from various angles:

Please note that all photos do not have to be taken. Photographs should be used to recognize what the item overall looked like and any specific area that was sampled.

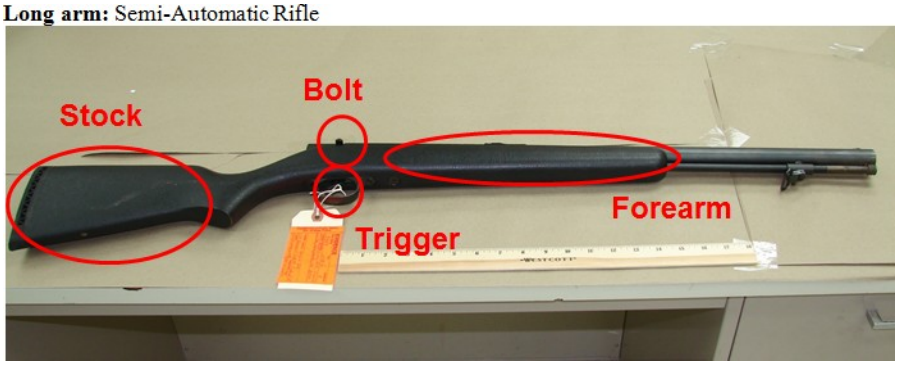
1.15.6.2 Examples of various firearms with areas noted for educational purposes:

Handgun: Revolver

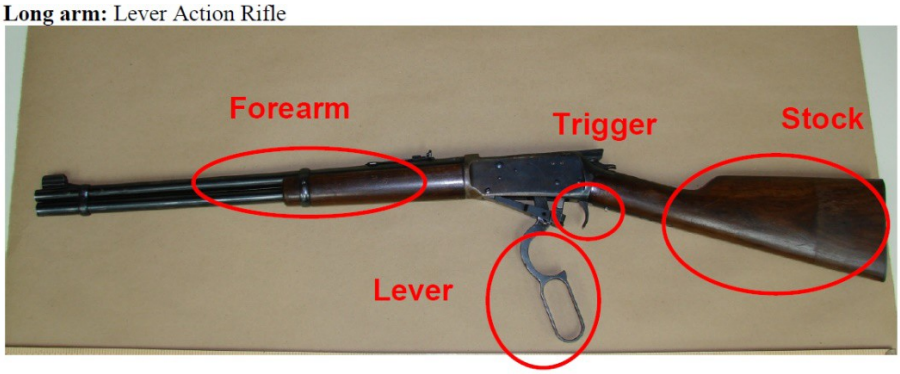


Handgun: Semi-Automatic Pistol

Long arm: Semi-Automatic Rifle



Long arm: Lever Action Rifle

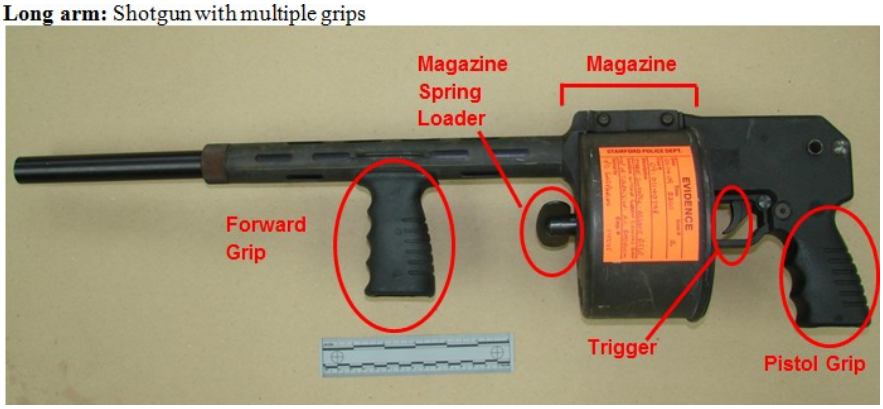


Long arm: Semi-Automatic Rifle

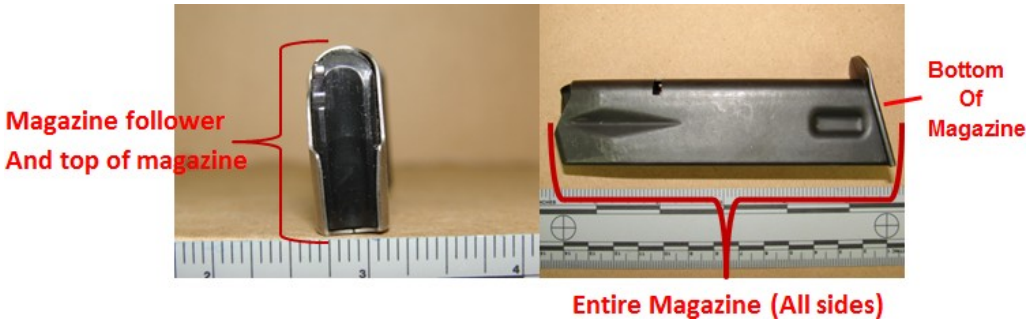
Long arm: Shotgun (Pump Action)

Long arm: Shotgun

Long arm: Shotgun with multiple grips



1.15.6.3 Examples of a magazine with areas noted for educational purposes:



1.15.6.4 Cartridges photographed from various angles noted for educational purposes:

1.15.6.5 Examples of bullets/projectiles and cartridge cases/casings:

Bullets/projectiles

cartridge cases/casings

1.15.7 Appendix G: Guidance for Cellular Phones

1.15.7.1 General

Special consideration must be taken when cellular phones are submitted with a Digital Device Analysis request and either a Forensic Biology (FB) request or both a FB and Latent Print (LP) request.

- The cellular phone must be protected from data loss until its condition can be determined by the Computer Crimes Electronic Evidence Unit (CCEEU).
- A Faraday Box (or similar container) acts as a barrier and is utilized to protect the phone upon submission to the Evidence Receiving Unit (ERU) and transport to the CCEEU.

1.15.7.2 Workflow Scenarios

1.15.7.2.1 General

- CCEEU will transfer the protected cellular phone from ERU to a designated area in CCEEU consisting of a tented barrier and aseptic area within.
- In the presence of FB or FB and LP, according to the requests, CCEEU will open the package and determine the condition of the phone (i.e., off, on, airplane mode etc).
- Guidance may be provided from LP/FB on how to handle the phone at this time.

1.15.7.2.2 Cellular phone is determined to be off.

- The phone will remain off and no longer needs to be in a protective container.
- Process per normal course.

1.15.7.2.3 Cellular phone is determined to be on and secured (in airplane mode or SIM card removed).

- CCEEU will provide a charging cord as the phone must remain on and charging but no longer needs to be in a protective container.
- Process per normal course (LP/FB may conduct exam within CCEEU tent or in own unit).
- If within CCEEU tent, reminder to conduct LIMS transfers and sub-itemization according to GL-4.

1.15.7.2.4 Cellular phone is determined to be on but not secured (not in airplane mode or SIM card not removed).

- CCEEU **able** to make the phone secure.
- CCEEU will provide a charging cord as the phone must remain on and charging but no longer needs to be in a protective container.
- Process per normal course (LP/FB may conduct exam within CCEEU tent or in own unit).
- If within CCEEU tent, reminder to conduct LIMS transfers and sub-itemization according to GL-4.

1.15.7.2.5 Cellular phone is determined to be on but not secured (not in airplane mode or SIM card not removed).

- CCEEU **unable** to make the phone secure.

- The phone **cannot** leave the tent in CCEEU.
- LP/FB to process/collect sample(s) within the tent.
- Reminder to conduct LIMS transfers and sub-itemization according to GL-4.

1.15.7.2.6 If blood is observed in any of the above scenarios involving LP exam, refer to section 1.15.3.2 Appendix C for additional guidance.

1.15.8 Appendix H: Proficiency Guidance

1.15.8.1 General

- In general, each FB examiner will receive (1) external blood/body fluid proficiency per year:
- Examiners competent in hair screening exam will receive a separate external hair proficiency.

1.15.8.2 Examination/Testing/LIMS:

- Direct-to-DNA testing will not be considered.
- No samples will be collected, forwarded to DNA or retained in the Forensic Biology Unit. Therefore, there will be no sample sub-itemization.
- The case scenario does not apply to two of the items provided. Testing of these items should demonstrate competency in all body fluids the examiner is trained to conduct, regardless of appearance.

1.15.8.3 Reporting

- Forensic Biology reports will be written by examiners trained in report writing.
- Forensic Biology reports will not be sub-itemized.
- FB will be responsible for uploading test results to the CTS proficiency portal.
- An electronic proficiency spreadsheet is provided on the shared drive for tracking purposes.
- For additional information, see GL-16 (Proficiency Testing).

1.15.9 Appendix I: Liquid Samples

1.15.9.1 <u>Suspected liquid urine</u>

Prepare stain as follows:

- Allow any cellular material in the sample to settle toward the bottom of the container.
- Using a sterile disposable pipette, draw up the bottom sediment and make a stain on filter paper.
- Allow stain to air dry under a hood.

1.15.9.2 Suspected liquid saliva/vomit
Prepare a stain on filter paper and allow to air dry under a hood.

1.15.9.3 Suspected liquid semen
Collect a sample using a maximum of 3 swabs and allow to air dry under a hood.

1.15.9.4 Handle the above prepared samples according to case information and sections 1.13.1 and 1.13.2 for direct-to-DNA testing or semen/saliva testing followed by DNA analysis as indicated.

1.16 REFERENCES

1.16.1 GL-2 (Safety Manual)
1.16.2 GL-4 (LIMS)
1.16.3 GL-5 (Ethics)
1.16.4 GL-12 (Evidence Receiving)
1.16.5 GL-13 (General Evidence Handling)
1.16.6 GL-16 (Proficiency Testing)
1.16.7 FLIN SOP-07 (SEM sample collection on clothing for GSR analysis)
1.16.8 FB/DNA SOP-01 (Collection of DNA from FCC)
1.16.9 LP SOP-02 (Appendix 1 Latent Print Processing)