



Laboratory Services Questioned Documents

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Bureau of Alcohol, Tobacco, Firearms and Explosives
Laboratory Services
Policies and Procedures Guidelines
Questioned Document Section
QD1 Handwriting/ Hand Printing Examinations

PRINCIPLE:

To determine, if possible, whether or not a specific writer wrote the questioned handwritten or hand printed material.

SPECIAL HANDLING:

1. Evidence containing body fluids that is received in the Document Section should be dried under a hood and then repackaged in a paper box or envelope. Items should be handled in order to prevent examiner exposure and preserve DNA, if requested by the submitter. Contents should be documented on the front of the packaging.
2. When handling a contaminated document, the examiner must have on a lab coat and rubber gloves. The evidence should be opened and examined only under a biohazard safety hood. After examination the document should be heat sealed. The work area should be disinfected and the lab coat placed in a biohazard bag and sent to the laundry. The gloves must be placed in a properly labeled biohazard disposal after the examination is concluded.
3. Evidence submitted requesting a latent print examination should be placed in a plastic or mylar sheet protector covering the evidence. In this case, item and examiner identifying marks should be placed on the protective sheet.

SPECIMEN(S):

1. An item containing an unknown/questioned handwritten or hand printed entry.
2. Sufficient known standards/writings of each individual suspect to be compared.

SUPPLIES REQUIRED:

Paper, pen, photocopies of evidence

APPARATUS REQUIRED:

1. Stereoscopic microscope and/or hand magnifier
2. Light sources
3. photocopier

CALIBRATION REQUIREMENTS:

Microscope maintained in house.

No special calibration beyond routine maintenance is required.

PROCEDURE:

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The method for conducting a handwriting/hand printing examination will generally include the following:

1. Distinguish items into questioned and known categories.
2. The evidence is marked in ink with the appropriate item number as it appears on the Laboratory transmittal sheet, the case number, and the examiner's initials or other mark. Items on the transmittal sheet may be amended by adding "Q" and "K" identifiers. Such amendments should be notated on a copy of the transmittal placed in the case jacket and the contributor should be notified via phone or email. It will be determined by the Forensic Document Examiner on a case by case basis if the quality of photocopied and/or photographed evidence (known and questioned) contains sufficient detail to support any of the nine conclusions that may be rendered.
3. Compare the known writings to insure that those submitted as being by one writer were written by one writer.
4. If there is more than one questioned item, cross-compare them with each other to determine if all items were prepared by the same writer.
5. Examine in detail the known writing assessing both class and individual characteristics.
6. Using a stereoscopic microscope, examine in detail the questioned writing assessing both class and individual characteristics. Some of the individualizing characteristics include: General writing style, slant, line quality, line shading or pen pressure, relationships and proportion of letters and words, spacing, initial and final strokes, pen lifts, alignment, direction of strokes, method of formation of letters, punctuation, drag marks, and retouching or patching
7. Compare each questioned item with each set of known writings assessing the similarities as well as the dissimilarities that appear in the writing, weighing the significance of each that are observed.
8. Make written notes on photocopies and/or worksheet(s) of a representative sample of the significant characteristics of the evidence documenting similarities and dissimilarities of each item.
9. Formulate a conclusion based on all the evidence examined.
10. A complete technical review is conducted by another qualified examiner and documented and initialed on Technical Case File Review Form.
11. Record findings in written form and have the results recorded on a formal laboratory report.
12. The bases and reasons for the conclusion(s), opinion(s), or finding(s) should be included either on the examiner's worksheet or on photocopies and may be also included in the report.

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13. It is the responsibility of the submitter to authenticate suspect's collected standards received from a business, school, or social environment. Collected standards are accepted by the document examiner as known writing of a particular writer. If at any point it is revealed that one or more standards cannot be authenticated, any final report issued based on those standards becomes null and void and a new examination must be conducted based on the remaining evidence.

DOCUMENTATION:

Work notes consisting of photocopies of a representative sample of the significant characteristics of the evidence on which the examiner marks similarities and/or dissimilarities together with the written observations of the examiner. A Questioned Document Worksheet will accompany each case and should include the equipment and/or procedures used, the identifying or eliminating features, and the results of analysis.

REFERENCES:

Conway, James V. P., Evidential Documents, Charles C. Thomas

Publisher, Springfield, Illinois, 1972.

Harrison, Wilson R., Suspect Documents: Their Scientific Examination, Swed & Maxwell Limited, London, England, 1966.

Lindblom B., Kelly J. Scientific Examination of Questioned Documents 2nd Ed., Taylor & Francis Group, Boca Raton, FL, 2006

Osborn, Albert S., Questioned Documents, Nelson-Hall Inc., Chicago, Illinois, 1929.

SWGDOC Standard Guide for Examination of Handwritten Items

ASTM 1658-08 Standard Guide for Expressing Conclusions of Forensic Document Examiners

Various professional papers written on various aspects of Handwriting identification.

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QD2 Typewriting Examinations

PRINCIPLE:

To determine, if possible, whether or not a given typewriter was used to make the questioned typewritten entries.

SPECIAL HANDLING:

1. Evidence containing body fluids that is received in the Document Section should be dried under a hood and then repackaged in a paper box or envelope. Items should be handled in order to prevent examiner exposure and preserve DNA, if requested by the submitter. Contents should be documented on the front of the packaging.
2. When handling a contaminated document, the examiner must have on a lab coat and rubber gloves. The evidence should be opened and examined only under a biohazard safety hood. After examination the document should be heat sealed. The work area should be disinfected and the lab coat placed in a biohazard bag and sent to the laundry. The gloves must be placed in a properly labeled biohazard disposal after the examination is concluded.
3. Evidence submitted requesting a latent print examination should be placed in a plastic or mylar sheet protector covering the evidence. In this case, item and examiner identifying marks should be placed on the protective sheet.

SPECIMEN(S):

1. An item containing an unknown/questioned typewritten entry.
2. A suspect typewriter from which to obtain sufficient known standards and/or typewritten standards from the suspect machine.
3. Typewriter ribbon

SUPPLIES REQUIRED:

Paper, pen, photocopies of evidence

APPARATUS REQUIRED:

Stereoscopic microscope, hand magnifier, typewriter alignment grids or plates, FBI typestyle manuals, photocopier, and Bouffard Typewriter Database

CALIBRATION REQUIREMENTS:

Microscope maintained in house.

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No special calibration beyond routine maintenance is required.

PROCEDURE:

The method for conducting a typewriting examination will generally include the following:

1. The evidence is marked with ink with the appropriate item number as it appears on the Laboratory transmittal sheet, the case number, and the examiner's initials or other mark. Items on the transmittal sheet and may be amended by adding "Q" and "K" identifiers. Such amendments should be notated on a copy of the transmittal placed in the case jacket and the contributor should be notified via phone or email. A tag is placed on the typewriter, if submitted, containing its item number and the case number. The typewriter ribbon is removed and an item number is placed on the cartridge. After the ribbon is read the ribbon and cartridge are placed in an envelope and marked. Any standards taken from the suspect typewriter are documented with the examiner's name, the date, serial number of the typewriter and normally located in the top right hand corner.
2. Visual examination and measurements of the questioned typewritten entry(ies) are taken.
3. When applicable, attempt to classify the questioned typewritten entry using a typewriter classification system and/or the Bouffard Typewriter Database, and single element typestyle manual.
4. Examine the questioned typewritten entry using typewriter grids or plates to determine alignment and pitch in horizontal and vertical spacing.
5. Examine the questioned typewriter/typewritten entries for alignment defects and typeface defects.
6. Using a stereoscopic microscope, examine the questioned typewritten entries.
7. Make a written note of any defects.
8. If a known typewriter is submitted, the individual typeface on the machine should be examined for class and individual characteristics.
9. If a known typewriter standard for the questioned typestyle is available, it should be examined for class characteristics.
10. Compare the questioned typewritten entry with the set of known typewriting assessing the similarities as well as dissimilarities.

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11. Make written notes on the photocopies and/or worksheet(s) of a representative sample of the significant characteristics of the evidence documenting the similarities and dissimilarities of each item.
12. Formulate a conclusion based on all the evidence examined.
13. A complete technical review is conducted by another qualified examiner and documented and initialed on Technical Case File Review Form.
14. Record findings in written form and have results recorded on a formal laboratory report.
15. The bases and reasons for the conclusion(s), opinion(s), or finding(s) should be included either on the examiner's worksheet or on photocopies and may be also included in the report.

DOCUMENTATION:

Work notes consisting of photocopies of a representative sample of the significant characteristics of the evidence on which the examiner marks similarities and/or dissimilarities together with the written observations of the examiner. Measurements from test grids should also be included. A Questioned Document Worksheet will accompany each case and should include the equipment and/or procedures used, the identifying or eliminating features, and the results of analysis.

REFERENCES:

ASTM E2494-08 The Standard Guide for the Examination of Typewritten Items

FBI, Typewriter Single Element and Printwheel Typestyle Manual

Hilton, Ordway, Scientific Examination of Questioned Documents Elsevier Science Publishing Co., Inc., New York, New York, 1982.

Osborn, Albert S., Questioned Documents, Nelson-Hall, Inc., Chicago, Illinois, 1929.

Various professional papers written on various aspects on typewriter identification as well as workshop materials.

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QD3 Typewriter Ribbon Examination

PRINCIPLE:

To locate a questioned typewritten text on a single-strike carbon typewriter ribbon, and link it to a particular typewritten impression on a document.

SPECIAL HANDLING:

The ribbon should be held with the tips of the fingers trying to avoid areas where typewritten impressions are located. Ribbon should not be stretched or pulled.

SPECIMEN(S):

Typewriter ribbon containing questioned impressions

SUPPLIES REQUIRED:

Paper, pen

APPARATUS REQUIRED:

Stereoscopic microscope, hand magnifier, transmitted light box

CALIBRATION REQUIREMENTS:

Microscope maintained in house.

No calibration beyond routine maintenance is required.

PROCEDURE:

1. Remove ribbon cartridge from typewriter.
2. The cartridge is marked with the appropriate item number as listed on the laboratory transmittal sheet. After the ribbon is removed from the cartridge and read the cartridge and ribbon are placed in an envelope which is labeled with the item number, case number and the examiner's initials or other mark. Items on the transmittal sheet may be amended by adding "Q" and "K" identifiers. Such amendments should be notated on a copy of the transmittal placed in the case jacket and the contributor should be notified via phone or email.
3. Remove ribbon from inside cartridge.
4. Unwind ribbon from reel.
5. Scan the ribbon for the questioned typewritten text.

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6. If the questioned text is located, examine the carbon transfer from the ribbon to the paper and/or the paper fiber images on the ribbon using a stereoscopic microscope.
7. Make written notes of the similarities and/or dissimilarities.
8. Formulate a conclusion based on all the evidence examined.
9. A complete technical review is conducted by another qualified examiner and documented and initialed on Technical Case File Review Form.
10. Record findings in written form and have the results recorded on a formal laboratory report.
11. If the questioned text is located on the ribbon, that section of the ribbon should be transcribed into the final report.
12. The bases and reasons for the conclusion(s), opinion(s), or finding(s) should be included either on the examiner's worksheet or on photocopies and may be also included in the report.

DOCUMENTATION:

Work notes on which the examiner marks similarities and dissimilarities together with the written observations of the examiner. Photographs should be made of the questioned entries on the ribbon. A Questioned Document Worksheet will accompany each case and should include the equipment and/or procedures used, the identifying or eliminating features, and the results of analysis.

REFERENCES:

Hahn, G. H. "Paper Fiber Impressions in Carbon Type Ribbons" Journal of Forensic Sciences, Volume 19, Number 1, January, 1974.

Hilton, Ordway, Scientific Examination of Questioned Documents, Elsevier Science Publishing Co., Inc., New York, New York, 1982.

Hilton, Ordway, "Identifying the Typewriter Ribbon Used to Write a Letter, A case Study Employing New Techniques" Journal of Criminal law, Criminology and Police Science, Volume 63, Number 1, March, 1972.

Osborn, Albert S., Questioned Documents, Nelson-Hall, Inc., Chicago, Illinois, 1929.

SWGDOC Standard Guide for Examination of Fracture Patterns and Paper Fiber Impressions on Single-Strike Film Ribbons and Typed Text

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Various professional papers written on various aspects of typewriter ribbon examination.

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QD4 Photocopy Examinations

PRINCIPLE:

To determine, if possible, whether a particular photocopier was used to produce a questioned photocopy.

SPECIAL HANDLING:

1. Evidence containing body fluids that is received in the Document Section should be dried under a hood and then repackaged in a paper box or envelope. Items should be handled in order to prevent examiner exposure and preserve DNA, if requested by the submitter. Contents should be documented on the front of the packaging.
2. When handling a contaminated document, the examiner must have on a lab coat and rubber gloves. The evidence should be opened and examined only under a biohazard safety hood. After examination the document should be heat sealed. The work area should be disinfected and the lab coat placed in a biohazard bag and sent to the laundry. The gloves must be placed in a properly labeled biohazard disposal after the examination is concluded.
3. Evidence submitted requesting a latent print examination should be placed in a plastic or mylar sheet protector covering the evidence. In this case, item and examiner identifying marks should be placed on the protective sheet.

SPECIMEN(S):

Questioned photocopied documents and/or standards from a suspect photocopy machine(s) or office machine(s).

SUPPLIES REQUIRED:

Paper, pen, photocopier

APPARATUS REQUIRED:

Stereoscopic microscope, hand magnifier, transmitted light box, ultraviolet illumination source, measuring devices, photocopier.

CALIBRATION REQUIREMENTS:

Microscope maintained in house.

No special calibration beyond routine maintenance is required.

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PROCEDURES:

1. The evidence is marked in ink with the appropriate item number as it appears on the Laboratory transmittal sheet, the case number, and the examiner's initials or other mark. Identify which items are questioned and which are known. Items on the transmittal sheet may be amended by adding "Q" and "K" identifiers. Such amendments should be notated on a copy of the transmittal placed in the case jacket and the contributor should be notified via phone or email.
2. Examine the questioned photocopy using a stereoscopic microscope.
3. Examine the original document, if available, using a stereoscopic microscope.
4. Examine any known photocopies from a suspect machine.
5. Examine all documents utilizing the Paper Examinations Policy and Procedure Guideline, to include examination by ultraviolet illumination.
6. Identify class characteristics of the questioned photocopied document, and all known photocopies to include method application (dry toner, liquid toner, or color toner).
7. Compare the questioned photocopied document to the original document and then compare both to all known photocopies to determine similarities as well as dissimilarities to include roller bar marks, and picker bar marks, and trash/drum marks.
8. Examine color copies for an encoded pattern which may be present and could be used to trace the serial number of the machine through the manufacturer.
9. Make written notes of the similarities and/or dissimilarities
10. Formulate a conclusion based on all the evidence examined.
11. A complete technical review is conducted by another qualified examiner and documented and initialed on Technical Case File Review Form.
12. Record findings in written form and have the results recorded on formal laboratory report forms.
13. The bases and reasons for the conclusion(s), opinion(s), or finding(s) should be included

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QD4 Photocopy Examinations

either on the examiner's worksheet or on photocopies and may be also included in the report.

14. Examination of original evidence both questioned and known is desired. However, if only a machine copy, facsimile copy, or microfilm copy exist, they may be submitted to the Laboratory for examination. All examinations based on machine, facsimile, and microfilm copies are subject to qualified opinions and may change based upon the examination of the original evidence.

DOCUMENTATION:

Work notes containing the similarities and dissimilarities together with the examiner's written observations. Measurements should be taken of the constellation of any noted trash, drum, or platen marks and noted on the worksheet or by a ruler accompanying the photocopies or photographs prepared. A Questioned Document Worksheet will accompany each case and should include the equipment and/or procedures used, the identifying or eliminating features, and the results of analysis.

REFERENCES:

SWGDOC Standard Guide for Examination of Documents Produced with Toner Technology

Canon Workshop materials, Copier Technology, Southeastern Association of Forensic Document Examiners April, 2010.

Kelly, JS, Lindblom, Brian, Scientific Examination of Questioned Documents Second Edition, CRC Press, Boca Raton, FL, 2006.

Hilton, Ordway, "Detecting Fraudulent Photocopies" Forensic Sciences International, Volume 13, 1979.

Kelly, James H., Classification and Identification of Modern Office Copiers, The American Board of Forensic Document Examiners, Inc., Colorado Springs, Colorado, 1983.

Various professional papers on aspects of photocopy examinations.

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QD5 Alteration, Obliteration and Ink Examination

PRINCIPLE:

To determine, if possible, if a particular entry has been altered or obliterated or to differentiate inks on the document.

SPECIAL HANDLING:

1. Evidence containing body fluids that is received in the Document Section should be dried under a hood and then repackaged in a paper box or envelope. Items should be handled in order to prevent examiner exposure and preserve DNA, if requested by the submitter. Contents should be documented on the front of the packaging.
2. When handling a contaminated document, the examiner must have on a lab coat and rubber gloves. The evidence should be opened and examined only under a biohazard safety hood. After examination the document should be heat sealed. The work area should be disinfected and the lab coat placed in a biohazard bag and sent to the laundry. The gloves must be placed in a properly labeled biohazard disposal after the examination is concluded.
3. Evidence submitted requesting a latent print examination should be placed in a plastic or mylar sheet protector covering the evidence. In this case, item and examiner identifying marks should be placed on the protective sheet.

SPECIMEN(S):

An altered or obliterated text or an altered entry(ies)

SUPPLIES REQUIRED:

Paper, pen

APPARATUS REQUIRED:

Stereoscopic microscope, hand magnifier, transmitted light box, various light sources, colored filters, Video Spectral Comparator, ultraviolet and infrared light sources, photocopier, and ESDA (Electrostatic Detection Apparatus)

CALIBRATION REQUIREMENTS:

Microscope maintained in house. No special calibration beyond routine maintenance is required. Examine a test sheet on the VSC prior to examining any casework. Test sheet is utilized to determine proper functioning of machine. If not, then a technician is called to check the equipment. Casework is suspended on the equipment until repairs are made.

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QD5 Alteration, Obliteration and Ink Examination

PROCEDURES:

1. The evidence is marked in ink with the appropriate item number as it appears on the Laboratory transmittal sheet, the case number, and the examiner's initials or other mark. Items on the transmittal sheet may be amended by adding "Q" and "K" identifiers. Such amendments should be notated on a copy of the transmittal placed in the case jacket and the contributor should be notified via phone or email.
2. Visually examine the document with a stereoscopic microscope.
3. Examine obliterated or altered area(s) using oblique light. In a darkened room, use microscope light to illuminate the document.
4. Examine obliterated or altered area(s) or inks using transmitted light. Place the document on a light box so that light is transmitted through the document.
5. Examine obliterated or altered area(s) or inks using ultraviolet light. Examine visually with the aid of the Video Spectral Comparator using colored filters.
6. Examine obliterated or altered area(s) or inks using infrared light. Examine visually with the aid of the Video Spectral Comparator using colored filters.
7. Examine obliterated or altered area(s) or inks using Infrared Luminescence. Examine visually with the aid of the Video Spectral Comparator using colored filters.
8. Examine for indentations using the Electrostatic Detection Apparatus, if necessary.
9. Lifts are generated from all ESDA runs.

Note: If necessary, the obliteration material may be removed through the use of chemicals and/or heat. This is also destructive to the document so it must not be done until all other examinations are completed and permission has been given from the submitting agency to use a destructive method to remove the obliterating material.

10. Copies of all lifts are to be placed into the case jacket, with originals returned with any other evidence to the contributor.
11. Make written notes of similarities and/or dissimilarities. Make note of settings on the Video Spectral Comparator. Make photocopies or photographs (with rulers) of all items for the case jacket.

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12. Formulate a conclusion based on all the evidence examined.
13. A complete technical review is conducted by another qualified examiner and documented and initialed on Technical Case File Review Form.
14. Record findings in written form and have the results recorded on formal laboratory report forms.
15. The bases and reasons for the conclusion(s), opinion(s), or finding(s) should be included either on the examiner's worksheet or on photocopies and may be also included in the report.

DOCUMENTATION:

Equipment used. Light sources used. A Questioned Document Worksheet will accompany each case and should include the identifying or eliminating features, and the results of the analysis.

REFERENCES:

Conway, James V. P., Evidential Documents, Charles C. Thomas Publisher, Springfield, Illinois, 1959.

Harrison, Wilson R., Suspect Documents Their Scientific Examination, Sweet & Maxwell, Ltd, London, England, 1966.

Hilton, Ordway, Scientific Examination of Questioned Documents, Elsevier Science Publishing Co., Inc., New York, New York, 1982

Kelly, JS, Lindblom, Brian, Scientific Examination of Questioned Documents Second Edition, CRC Press, Boca Raton, FL, 2006.

SWGDOC Standard Guide for the Examination of Altered Documents.

SWGDOC Standard Guide for Test Methods for Forensic Writing Ink Comparison.

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QD6 Indented Writing Examination

PRINCIPLE:

To detect and decipher, if possible, written indentations on paper.

SPECIAL HANDLING:

1. Evidence containing body fluids that is received in the Document Section should be dried under a hood and then repackaged in a paper box or envelope. Items should be handled in order to prevent examiner exposure and preserve DNA, if requested by the submitter. Contents should be documented on the front of the packaging.
2. When handling a contaminated document the examiner must have on a lab coat and rubber gloves. The evidence should be opened and examined only under a biohazard safety fuming hood. After examination the document should be heat sealed. The work area should be disinfected and the lab coat placed in a biohazard bag and sent to the laundry. The gloves must be placed in a properly labeled biohazard disposal after the examination is concluded.
3. Evidence submitted requesting a latent print examination should be placed in a plastic or mylar sheet protector covering the evidence. It should be documented in the case notes that a latent print examination has been requested. Do not lay heavy objects on the item to be examined for indentations. Do not write on the evidence container and/or envelope.

SPECIMEN(S):

An item purported to contain indentations.

SUPPLIES REQUIRED:

Paper, pen, toner, imaging film, scissors, rubber gloves, test indentation made on paper stock similar to the questioned document

APPARATUS REQUIRED:

Various light sources to include an articulated light source to produce oblique lighting, Electrostatic Detection Apparatus (ESDA)

CALIBRATION REQUIREMENTS:

Process "test indentations" to ascertain whether the ESDA is functioning properly. If image is faint, additional toner should be added to the cascade developer. Place the lid on the container and shake vigorously. A second "test for indentations" should be performed.

PROCEDURE:

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1. The evidence is marked in ink with the appropriate item number as it appears on the Laboratory transmittal sheet, the case number, and the examiner's initials or other mark. Items on the transmittal sheet may be amended by adding "Q" and "K" identifiers. Such amendments should be notated on a copy of the transmittal placed in the case jacket and the contributor should be notified via phone or email.
2. Photocopy each questioned item to be examined.
3. Examine the document using oblique lighting to disclose the presence of obvious indentations.
4. Process the document on the Electrostatic Detection Apparatus (ESDA)
 - A. Place document in humidifier for approximately five (5) minutes.
 - B. Remove document from humidifier and place on copper bed of the ESDA.
 - C. Turn on Vacuum pump
 - D. Pull imaging film over document and cut imaging film to needed size to fully cover the document.
 - E. Turn on and pass electrostatic wand over the document several times.
 - F. Tilt copper bed up slightly and allow toner to cascade down over entire document. (Process can be repeated as many times as needed to bring out indentations.)
 - G. Place adhesive mylar film on top of imaging film.
 - H. Remove adhesive mylar and imaging film from the original document.
 - I. Place adhesive mylar and imaging film on a white sheet of paper.
5. Make a photocopy of the adhesive mylar sheet.
6. The photocopy is placed in the case jacket with other notes and the original is returned to the contributor.
7. Formulate a conclusion based on all the evidence examined.
8. A complete technical review is conducted by another qualified examiner and documented and initialed on Technical Case File Review Form.
9. Record findings in written form and have the results recorded on formal laboratory report forms.

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10. The bases and reasons for the conclusion(s), opinion(s), or finding(s) should be included either on the examiner's worksheet or on photocopies and may be also included in the report.

DOCUMENTATION:

Work notes consisting of decipherment of the indentations. A photocopy or photograph of the adhesive mylar sheet from the ESDA. A Questioned Document Worksheet will accompany each case and may include the equipment and/or procedures used, the identifying or eliminating features, and the results of analysis.

REFERENCES:

ESDA - Operating Instructions, Foster & Freeman, LTD., Essex, England.

Hilton, Ordway, Scientific Examination of Questioned Documents, Elsevier Science Publishing Co., Inc., New York, New York, 1982.

Osborn, Albert S., Questioned Documents, Nelson-Hall, Inc., Chicago, Illinois, 1929.

ASTM E2291-03 Standard Guide for Indentation Examinations.

Various professional papers written on the applications of the Electrostatic Detection Apparatus.

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QD7 Charred Document Examinations

PRINCIPLE:

To determine, if possible, any decipherable information on the charred material.

SPECIAL HANDLING:

Charred evidence should be handled as little as possible. It should be stored on cotton batting in a large box with a lid that closes. Heavy objects should not be placed on the charred material.

SPECIMEN(S):

Any charred material

SUPPLIES REQUIRED:

Paper, pen, wetting solution (see formula in Procedures #16)

APPARATUS REQUIRED:

Stereoscopic microscope, hand magnifier, Video Spectral Comparator, infrared light source, colored filters

CALIBRATION REQUIREMENTS:

Microscope maintained in house. No special calibration beyond routine maintenance is required. Examine a test sheet on the VSC prior to examining any casework. Test sheet is utilized to determine proper functioning of machines. If not, then a technician is called to check the equipment. Casework is suspended on the equipment until repairs are made.

PROCEDURES:

1. Have charred documents photographed as they were received.
2. The container housing the charred items is marked with the item number, case number and examiner's initials or other mark in ink normally located in the right hand corner.
3. Visually examine the charred documents with a stereoscopic microscope.
4. Moisturize the charred documents with a suitable wetting solution.
5. Sort the charred documents searching for legible text.
6. Enhance the charred documents by examining them on the Video Spectral Comparator or by using infrared light.

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7. Search for any legible text.
8. Preserve the charred pieces between two glass plates, if possible.
9. Attempt to decipher the text.
10. Record the charred documents using lighting enhancement techniques (VSC or digital camera).
11. Make written notes of findings. Make notes of the setting on the Video Spectral Comparator and the nanometer measurements on the filters.
12. Formulate a conclusion based on all the evidence examined.
13. A complete technical review is conducted by another qualified examiner and documented and initialed on Technical Case File Review Form.
14. Record findings in written form and have the results recorded on formal laboratory report forms.
15. The bases and reasons for the conclusion(s), opinion(s), or finding(s) should be included either on the examiner's worksheet or on photocopies and may be also included in the report.
16. The wetting solution formula is 2 parts water, 5 parts alcohol (rubbing) and 3 parts glycerin. The wetting solution should be prepared under the fuming hood and the solution formula written on a label and placed on the outside of the bottle. The date prepared, the initials of the preparer, and an expiration date should also be documented on the label. If there is no expiration date, then the maximum age is one year.

DOCUMENTATION:

Work notes. Photographs. Equipment used. Light sources used. Nanometer measurements. A Questioned Document Worksheet will accompany each case and should include the equipment and/or procedures used, the identifying or eliminating features, and the results of analysis.

REFERENCES:

ASTM E2710 The Standard Guide for the Preservation of Charred Documents

Brunelle, Richard L. and Reed, Robert W., Forensic Examination of Ink and Paper, Charles C. Thomas Publisher, Springfield, Illinois, 1984.

Bureau of Alcohol, Tobacco, Firearms and Explosives
Laboratory Services
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Conway, James V. P., Evidential Documents, Charles C. Thomas Publisher, Springfield, Illinois, 1959.

Hilton, Ordway, Scientific Examination of Questioned Documents, Elsevier Science Publishing Co., Inc., New York, New York 1982.

Osborn, Albert S., Questioned Documents, Nelson-Hall, Inc., Chicago, Illinois, 1929.

Various professional papers on aspects of charred document examination.

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Laboratory Services
Policies and Procedures Guidelines
Questioned Document Section
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PRINCIPLE:

To determine, if possible, whether or not a given computer and/or printer was used to make the questioned entries.

SPECIAL HANDLING:

1. Evidence containing body fluids that is received in the Document Section should be dried under a hood and then repackaged in a paper box or envelope. Items should be handled in order to prevent examiner exposure and preserve DNA, if requested by the submitter. Contents should be documented on the front of the packaging.
2. When handling a contaminated document, the examiner must have on a lab coat and rubber gloves. The evidence should be opened and examined only under biohazard safety hood. After examination the document should be heat sealed. The work area should be disinfected and the lab coat placed in a biohazard bag and sent to the laundry. The gloves must be placed in a properly labeled biohazard disposal after the examination is concluded.
3. Evidence submitted requesting a latent print examination should be placed in a plastic or mylar sheet protector covering the evidence. In this case, item and examiner identifying marks should be placed on the protective sheet.

SPECIMEN(S):

1. An item containing an unknown/questioned entry.
2. Sufficient standards from a suspect printer and suspect computer, if available

SUPPLIES REQUIRED:

Paper, photocopies of evidence or photocopied or photograph enlargements of evidence

APPARATUS REQUIRED:

Stereoscopic microscope, sufficient light sources, computer, printer

CALIBRATION REQUIREMENTS:

No special calibration beyond routine maintenance is required.

PROCEDURE:

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1. The evidence is marked with the appropriate item number as it appears on the Laboratory transmittal sheet, the case number, and the examiner's initials or other mark. Items on the transmittal sheet may be amended by adding "Q" and "K" identifiers. Such amendments should be notated on a copy of the transmittal placed in the case jacket and the contributor should be notified via phone or email. A tag is placed on the computer/printer, if submitted, containing the item number, case number and examiner's initial or other mark. Items on the transmittal sheet may be amended by adding "Q" and "K" identifiers. Such amendments should be notated on a copy of the transmittal placed in the case jacket and the contributor should be notified via phone or email. If available and removable, the ribbon is removed from the printer and an item number placed either on the cartridge or on a tag.

Any standards taken from any suspect printers submitted must be documented in ink with the examiners name, the date, and the serial number of the printer.

2. For any printer(s) submitted to the laboratory, examine the print head and alignment on ink jet, dot matrix, and bubble jet printers.

3. Visual examination and measurements of the questioned entry(ies) are taken.

4. Using the appropriate apparatus, examine the documents for the characteristics listed for each of the different printing processes. These characteristics are intended to be used as a general guide for process identification.

Ink Jet

- 1) Dot matrix type pattern.
- 2) Ink is blown onto paper and may show spatter around printing or a splash effect around dots. Orientation of spatter may indicate direction of print head.
- 3) There is no embossing on the paper.
- 4) High-end ink jet printers appear as continuous tone printers because each pixel or dot is composed of anywhere from zero to thirty-one 15-micron dots.

Dot Matrix

- 1) The dot pattern is usually made from a 7, 9, 18, 24 or 27 pin printer with the 9 and 24 pin printers being the most common.
- 2) Dots are mechanically impressed into paper.

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- 3) Color dot matrix printers may consist of a combination of black, cyan, magenta and yellow or a combination of red, green and blue.
- 4) Usually uses a fabric ribbon.

Thermal Matrix

- 1) Dot matrix pattern is apparent.
- 2) There is no embossing on the paper.
- 3) Printing must be on thermal paper. Thermal paper turns black when a drop of acetone is placed on the paper.

Electrostatic Printing

Electrostatic printing can be found in photocopies and laser-printed documents.

- 1) Dry Toner
 - a) Toner particles are seen clustered around printed areas and may be seen scattered on other areas of the paper.
 - b) Trashmarks/drum marks may be present.
- 2) Liquid Toner
 - a) May give an appearance similar to lithographic printing.
 - b) Toner may appear on non-printed areas of the paper.
 - c) Trashmarks/drum marks may be present.

5. Examine the questioned entry(ies) using grids or plates to determine pitch in horizontal and vertical alignment.

5. Examine the questioned entries for alignment defects and typeface defects.

6. Examine the known standards using grids or plates to determine pitch in horizontal and vertical alignment.

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7. Examine the known standards for alignment defects and typeface defects.
8. Using a stereoscopic microscope examine the questioned entries.
9. Make a written note of any defects.
10. Check for individual and class characteristics.
11. Compare the questioned entry with any known standards assessing the similarities as well as dissimilarities.
12. Make written notes on the photocopies and/or worksheet(s) of a representative sample of the significant characteristics of the evidence documenting the similarities and dissimilarities of each item.
13. Formulate a conclusion based on all the evidence examined.
14. A complete technical review is conducted by another qualified examiner and documented and initialed on Technical Case File Review Form.
15. Record findings in written form and have results recorded on a formal laboratory report.
16. The bases and reasons for the conclusion(s), opinion(s), or finding(s) should be included either on the examiner's worksheet or on photocopies and may be also included in the report.

DOCUMENTATION:

Work notes consisting of photocopies of a representative sample of the significant characteristics of the evidence on which the examiner marks similarities and/or dissimilarities together with the written observations of the examiner. Measurements from any test grids should be included.

A Questioned Document Worksheet will accompany each case and should include the equipment and/or procedures used, the identifying or eliminating features, and the results of analysis.

REFERENCES:

Questioned Document Database Reference for Computer Printers.

The Use of Image Analysis to Differentiate Laser Printers, Holt, Melanie, Specialist Project 2008

Various professional papers written on various aspects of computer printers.

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QD9 Facsimile Examinations

PRINCIPLE:

To determine, if possible, whether a given facsimile originated from a specific make and/or model of fax machine.

SPECIAL HANDLING:

1. Evidence containing body fluids that is received in the Document Section should be dried under a hood and then repackaged in a paper box or envelope. Items should be handled in order to prevent examiner exposure and preserve DNA, if requested by the submitter. Contents should be documented on the front of the packaging.
2. When handling a contaminated document, the examiner must have on a lab coat and rubber gloves. The evidence should be opened and examined only under a biohazard safety hood. After examination the document should be heat sealed. The work area should be disinfected and the lab coat placed in a biohazard bag and sent to the laundry. The gloves must be placed in a properly labeled biohazard disposal after the examination is concluded.
3. Evidence submitted requesting a latent print examination should be placed in a plastic or mylar sheet protector covering the evidence. In this case, item and examiner identifying marks should be placed on the protective sheet.

SPECIMEN(S):

1. An item containing an unknown/questioned faxed text and Transmitting Terminal Identifier.
2. Faxed text and Transmitting Terminal Identifier from a suspect facsimile machine.

SUPPLIES REQUIRED:

Paper, pen, photocopies of evidence

APPARATUS REQUIRED:

Hand magnifier, typewriter test grids or plates, fax font reference file, photocopier

CALIBRATION REQUIREMENTS:

No equipment requiring special calibration or maintenance.

PROCEDURE:

The method for conducting a facsimile examination will generally include the following:

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1. The evidence is marked with the appropriate item number as it appears on the Laboratory transmittal sheet, the case number, and the examiner's initials or other mark. Items on the transmittal sheet may be amended by adding "Q" and "K" identifiers. Such amendments should be notated on a copy of the transmittal placed in the case jacket and the contributor should be notified via phone or email.
2. Visual examination for content, font and format of the Transmitting Terminal Identifier.
3. Attempt to classify the Transmitting Terminal Identifier using the fax font reference files.
4. If a known facsimile sample containing a Transmitting Terminal Identifier is available, compare content, font and format with unknown/questioned Transmitting Terminal Identifier.
5. Visual examination for evidence of any defect or burned out element on either sending or receiving facsimile machine.
6. Make a written note of any defect.
7. Using typewriter grids or alignment grids document the position or alignment of defect with respect to the Transmitting Terminal Identifier and facsimile text.
8. Make written notes on the photocopies and/or worksheet(s) of the significant similarities and dissimilarities of each item.
9. Formulate a conclusion based on all the evidence examined.
10. A complete technical review is conducted by another qualified examiner and documented and initialed on Technical Case File Review Form.
11. Record findings on written form and have results recorded on a formal Laboratory report.
12. The bases and reasons for the conclusion(s), opinion(s), or finding(s) should be included either on the examiner's worksheet or on photocopies and may be also included in the report.

DOCUMENTATION:

Work notes consisting of photocopies of the significant characteristics of the evidence on which the examiner marks similarities and/or dissimilarities together with the written observations of the examiner. A Questioned Document Worksheet will accompany each case and should include equipment and/or procedures used, the identifying or eliminating features, and the results of analysis.

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REFERENCES:

A Collection of Fax Fonts, ASQDE website www.asqde.org

Lindblom B. Kelly, J Scientific Examination of Questioned Documents 2nd Ed., Taylor & Francis Group, Boca Raton, FL, 2006

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QD10 Physical Match of Paper Cuts, Tears and Perforations

PRINCIPLE:

To determine, if possible, if two or more paper fragments were, at some time, joined or were perforated while one was on top of the other.

SPECIAL HANDLING:

1. Evidence containing body fluids that is received in the Document Section should be dried under a hood and then repackaged in a paper box or envelope. Items should be handled in order to prevent examiner exposure and preserve DNA, if requested by the submitter. Contents should be documented on the front of the packaging.
2. When handling a contaminated document, the examiner must have on a lab coat and rubber gloves. The evidence should be opened and examined only under a biohazard safety hood. After examination the document should be heat sealed. The work area should be disinfected and the lab coat placed in a biohazard bag and sent to the laundry. The gloves must be placed in a properly labeled biohazard disposal after the examination is concluded.
3. Evidence submitted requesting a latent print examination should be placed in a plastic or mylar sheet protector covering the evidence. In this case, item and examiner identifying marks should be placed on the protective sheet.

SPECIMEN(S):

Two or more unknown/questioned items

APPARATUS REQUIRED:

Stereo microscope, hand magnifier, VSC or other UV/IR illumination source, and other sufficient light sources

PROCEDURES:

The method for conducting a physical match examination will generally include the following:

1. The evidence is marked with the appropriate item number as it appears on the Laboratory transmittal sheet, the case number, and the examiner's initials or other mark. Items on the transmittal sheet may be amended by adding "Q" and "K" identifiers. Such amendments should be notated on a copy of the transmittal placed in the case jacket and the contributor should be notified via phone or email.

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2. All procedures shall be performed when applicable and noted when appropriate and all examinations performed, relevant observations, and results shall be documented.
3. Procedures should be discontinued or limited should there be a determination that a particular feature is not present or that an item is lacking in quality or comparability and the reasons for such should be documented. A report should then be produced.
4. Determine whether the specimens are broken or separated.
5. Determine whether the specimens are suitable to be physically realigned.
6. Evaluate the specimens for individualizing characteristics.
7. Conduct a side-by-side comparison of the specimens using the following steps: Visual inspection, Ultraviolet and Infrared examination, manual alignment, edge-to-edge alignment, surface markings, and measurements and pattern count.
8. Evaluate similarities, differences, and limitations and determine their significance individually and in combination.
9. Reach a conclusion and report accordingly.
10. The bases and reasons for the conclusion(s), opinion(s), or finding(s) should be included either on the examiner's worksheet or on photocopies and may be also included in the report.

REFERENCES

ASTM E2288 (current edition) Standard Guide for Physical Match of Paper Cuts, Tears and Perforation in Forensic Document Examinations

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QD11 Rubber Stamp and Rubber Stamp Impressions Examinations

PRINCIPLE:

To determine, if possible, if two or more rubber stamp impressions resulted from the same stamp or if a known stamp produced a questioned impression(s).

SPECIAL HANDLING:

1. Evidence containing body fluids that is received in the Document Section should be dried under a hood and then repackaged in a paper box or envelope. Items should be handled in order to prevent examiner exposure and preserve DNA, if requested by the submitter. Contents should be documented on the front of the packaging.
2. When handling a contaminated document the examiner must have on a lab coat and rubber gloves. The evidence should be opened and examined only under a biohazard safety hood. After examination the document should be heat sealed. The work area should be disinfected and the lab coat placed in a biohazard bag and sent to the laundry. The gloves must be placed in a properly labeled biohazard disposal after the examination is concluded.
3. Evidence submitted requesting a latent print examination should be placed in a plastic or mylar sheet protector covering the evidence. In this case, item and examiner identifying marks should be placed on the protective sheet.

SPECIMEN(S):

1. A questioned impression and known stamp, or
2. Two or more questioned impressions, or
3. Two or more questioned impressions and known stamp

APPARATUS REQUIRED:

Stereo microscope, hand magnifier, sufficient light source(s)

PROCEDURES:

The method for conducting a rubber stamp examination will generally include the following:

1. The evidence is marked with the appropriate item number as it appears on the Laboratory transmittal sheet, the case number, and the examiner's initials or other mark. Items on the transmittal sheet may be amended by adding "Q" and "K" identifiers. Such amendments should be notated on a copy of the transmittal placed in the case jacket and the contributor should be notified via phone or email.

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2. All procedures shall be performed when applicable and noted when appropriate and all examinations performed, relevant observations, and results shall be documented.
3. Procedures should be discontinued or limited should there be a determination that a particular feature is not present or that an item is lacking in quality or comparability and the reasons for such should be documented. A report should then be produced.
Note: Limitations can include over inked impressions or partially or inadequately inked stamps.
4. Determine whether the submitted questioned impression(s) were produced by a rubber stamp. If not a rubber stamp impression (original or copy), discontinue examination and report accordingly.
5. Determine whether the examination is a comparison of questioned impressions; a comparison of questioned impression(s) with a known impression(s); or a comparison of a questioned impression(s) with a rubber stamp(s).
6. Determine whether the submitted questioned impression(s) is suitable for comparison. If it is not suitable for comparison, discontinue the procedure and report accordingly. Factors that affect the suitability include clarity, detail, degree of inking or condition of the document.
7. If no known specimen impressions or rubber stamp(s) submitted, go to 15.
8. If a rubber stamp(s) is submitted, its condition should be noted (e.g., clean, dirty, inked, worn, damaged).
9. Note, when applicable, class characteristics (e.g., typeface design and size).
10. Note any visible features that reproduce on the impression.
11. Take ink sample if required/requested.
12. Prepare appropriate specimens, as needed.
13. Determine if any of the known specimen impressions are suitable for comparison.
14. If none of the known specimen impressions are suitable for comparison and no others are obtained, discontinue these procedures and report accordingly.

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15. Conduct a side-by-side comparison of the questioned impressions, or the questioned impression to the known impressions and/or to the rubber stamp(s).
16. Compare class characteristics (e.g., size, type style, text, shape). If different, discontinue and report accordingly.
17. Compare individualizing characteristics in common such as wear and damage defects, reproducible blemishes, impression voids, improper and extraneous inking, or coincidental peripheral printing (use transparency overlays when needed).
18. Evaluate similarities, differences, and limitations. Determine their significance individually and in combination. Consideration should be given to the possibility that a rubber stamp can be manufactured which duplicates the impressions of another stamp, and that various forms of simulations, imitations, and duplicates of rubber stamps or rubber stamp impressions can be generated by computer and other means.
19. Make written notes on photocopies and/or worksheet(s) of a representative sample of the significant characteristics of the evidence documenting similarities and dissimilarities of each item.
20. Formulate a conclusion based on all the evidence examined.
21. A complete technical review is conducted by another qualified examiner and documented and initialed on Technical Case File Review Form.
22. Record findings in written form and have the results recorded on a formal laboratory report.
23. The bases and reasons for the conclusion(s), opinion(s), or finding(s) should be included either on the examiner's worksheet or on photocopies and may be also included in the report.

REFERENCES

ASTM E2289-03 – Standard Guide for Examination of Rubber Stamp Impressions.

Herbertson, G., Rubber Stamp Examination: A Guide for Forensic Document Examiners, WideLine Publishing, Colorado Springs, CO, 1997.

Kelly, Jan S., Forensic Examination of Rubber Stamps, Charles C. Thomas Publishing, Springfield, IL, in press.



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PRINCIPLE:

To define terminology for expressing questioned document conclusions.

PROCEDURE:

Questioned Document terminology for expressing conclusions is defined as follows:

Conclusions Regarding Forensic Handwriting Examinations

An examiner may offer any of the following conclusions:

1. Source identification (i.e., identified)
2. Support for common source
 - a. Strong support for common source
 - b. Limited support for common source
3. Inconclusive
4. Support for different sources
 - a. Limited support for different sources
 - b. Strong support for different sources
5. Source exclusion (i.e., excluded)

1. SOURCE IDENTIFICATION

‘Source identification’ is an examiner’s conclusion that two or more bodies of writing were prepared by the same writer. This conclusion is an examiner’s opinion that 1) the observed quality and quantity of similar characteristics are such that the examiner would not expect to see that same combination of characteristics repeated in a body of writing prepared by another writer; 2) there are no significant dissimilarities to conclude that the bodies of writing were not prepared by the same writer; and 3) there are no significant limitations with the items examined or the circumstances considered (e.g. the writer’s skill level, sufficient number of known standards).

The basis for a ‘source identification’ conclusion is an examiner’s opinion that the observed similar characteristics provide extremely strong support for the proposition that the bodies of writing were prepared by the same writer and extremely limited or no support for the proposition that the writings were prepared by different writers.

A ‘source identification’ is the statement of an examiner’s opinion (an inductive inference) that the probability that a different writer prepared the questioned body of writing is so small that it is negligible.



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2. SUPPORT FOR COMMON SOURCE

‘Support for common source’ is an examiner’s conclusion that two or more bodies of writing may have been prepared by the same writer. This conclusion is an examiner’s opinion that 1) the bodies of writing exhibit a prevalence of similar characteristics to indicate they may have been prepared by the same writer; 2) there are insufficient dissimilar characteristics to indicate that the bodies of writing may not have been prepared by the same writer; and 3) the bodies of writing have limitations that prevent the examiner from providing a ‘source identification’ conclusion. The degree of ‘support for common source’ may range from limited to strong.

The basis for a ‘support for common source’ conclusion is an examiner’s opinion that the observed similar characteristics provide limited to strong support for the proposition that the bodies of writing may have been prepared by the same writer and insufficient support for the proposition that the writings may have been prepared by different writers.

3. INCONCLUSIVE

‘Inconclusive’ is an examiner’s opinion that no determination can be reached as to whether two or more bodies of writing were prepared by the same writer or by different writers.

The basis for an ‘inconclusive’ conclusion is an examiner’s opinion that the bodies of writing have limitations that prevent the examiner from providing any conclusion regarding probable authorship.

4. SUPPORT FOR DIFFERENT SOURCES

‘Support for different sources’ is an examiner’s conclusion that two or more bodies of writing may not have been prepared by the same writer. This conclusion is an examiner’s opinion that 1) the bodies of writing exhibit a prevalence of dissimilar characteristics to indicate they may not have been prepared by the same writer; 2) there are insufficient similar characteristics to indicate that the bodies of writing may have been prepared by the same writer; and 3) the bodies of writing have limitations that prevent the examiner from making an ‘exclusion’ conclusion. The degree of ‘support for different sources’ may range from limited to strong.

The basis for a ‘support for different sources’ conclusion is an examiner’s opinion that the observed dissimilar characteristics provide limited to strong support for the proposition that the bodies of writing may have been prepared by different writers and insufficient support for the proposition that the writings may have been prepared by the same writer.

5. SOURCE EXCLUSION

‘Source exclusion’ is an examiner’s conclusion that two or more bodies of writing were not prepared by the same writer. This conclusion is an examiner’s opinion that the bodies of writing exhibit different handwriting characteristics and there are no significant limitations with the



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items examined or the circumstances considered (e.g. the writer’s skill level, sufficient number of known standards, eliminating the possibility of alternative writing styles).

The basis for a ‘source exclusion’ conclusion is an examiner’s opinion that the observed different characteristics provide extremely strong support for the proposition that the bodies of writing were prepared by the different writers and extremely limited or no support for the proposition that the writings were prepared by the same writer.

REFERENCES:

There are additional qualifications and limitations of Forensic Document Examinations¹

¹ DOJ ULTR, www.justice.gov/olp/uniform-language-testimony-and-reports

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QD13 Cigarette Tax Stamp Examinations

PRINCIPLE:

To determine, if possible, if a particular cigarette tax stamp is authentic.

There are several manufacturers of cigarette tax stamps including SICPA, headquartered in Lausanne, Switzerland which owns Meyercord in Carol Stream, Illinois. Tax stamp manufacturers have proprietary tests to determine the authenticity of their products. Some states such as North Carolina, South Carolina and North Dakota do not have tax stamps.

California and Massachusetts have adhesive based stamps produced by Meyercord in conjunction with SICPA that contain encrypted code detailing the date of manufacture, production machine and wholesaler. Readers for these stamps can be purchased which will enable a user to determine their authenticity. The readers needed to download the encrypted information are only available to the state authorities.

The tax stamps manufactured by Meyercord have both overt and covert security features that can be examined using tests proscribed by the company. These features vary by state and both design and security features can change frequently. Exemplars should be obtained from the tax stamp manufacturer along with a list of security features prior to analysis if possible.

Other tests may be performed when deemed necessary by the examiner. These include, but are not limited to, Scanning Electron Microscopy (SEM), Scanning Electron Microscopy Energy Dispersive Spectrometry (SEM-EDS) and Microspectrophotometry.

SPECIAL HANDING:

1. Evidence containing body fluids that is received in the Document Section should be dried under a hood and then repackaged in a paper box or envelope. Items should be handled in order to prevent examiner exposure and preserve DNA, if requested by the submitter. Contents should be documented on the front of the packaging.

2. When handling a contaminated document the examiner must have on a lab coat and rubber gloves. The evidence should be opened and examined only under a biohazard safety hood. After examination the document should be heat sealed. The work area should be disinfected and the

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lab coat placed in a biohazard bag and sent to the laundry. The gloves must be placed in a properly labeled biohazard disposal after the examination is concluded.

3. Evidence submitted requesting a latent print examination should be placed in a plastic or mylar sheet protector covering the evidence. In this case, item and examiner identifying marks should be placed on the protective sheet.

SPECIMEN(S):

A single sheet, or roll of cigarette tax stamp(s)

SUPPLIES REQUIRED:

Paper, pen

APPARATUS REQUIRED:

The following apparatus may be required depending on the stamp and examiner determined tests: Stereoscopic microscope; hand magnifier; transmitted light box; various light sources; colored filters; photocopier; Meyercord Tagant reader, VSC (Video Spectral Comparator), or other instrumentation capable of emitting similar wavelengths, and UV instrumentation capable of emitting wavelengths of 254nm and 365nm; Meyercord chemical reagent ; stereomicroscope; ruler or caliper; a printing process identification manual

CALIBRATION REQUIREMENTS:

Microscope maintained in house. No special calibration beyond routine maintenance is required. Examine a test sheet on the VSC prior to examining any casework. Test sheet is utilized to determine proper functioning of machine. If not, then a technician is called to check the equipment. Casework is suspended on the equipment until repairs are made.

PROCEDURES:

The following may be performed. For additional examinations, please see ATF-LS-TE14.

1. If possible, obtain reference stamp(s) for the state with the same characteristics.

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2. If more than one stamp is submitted, such as a carton of cigarettes, examine all the stamps for the presence of the security design under longwave UV light.

3. If the stamps all exhibit the same characteristics (watermark, color, etc), sample one stamp randomly and note which stamp was sampled. If the stamps have different characteristics, the examiner must determine which stamps to sample and provide justification.

4. Note basic physical characteristics such as serial number, colors, size, and printing processes used.

5. Perform non-destructive tests available for the particular state such as variable image, print process, fluorescence under short wave, and Tagant.

6. If necessary, remove the tax stamp from the pack and perform the chemical reagent test.

7. The stamp may be further examined using SEM, SEM-EDS, microspectrophometry or other techniques as determined by the examiner.

8. The examiner will determine if further verification by the manufacturer is required. Stamps tested with the chemical reagent may be destroyed.

REFERENCES:

ATF-LS-TE14 The Examination of General Unknowns

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The tests proscribed by Meyercord are proprietary and law enforcement sensitive. They are not and cannot be published.

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QD14 Paper Examinations

PRINCIPLE:

To determine, if possible, whether or not a given computer and/or printer was used to make the questioned entries.

SPECIAL HANDLING:

1. Evidence containing body fluids that is received in the Document Section should be dried under a hood and then repackaged in a paper box or envelope. Items should be handled in order to prevent examiner exposure and preserve DNA, if requested by the submitter. Contents should be documented on the front of the packaging.
2. When handling a contaminated document the examiner must have on a lab coat and rubber gloves. The evidence should be opened and examined only under biohazard safety hood. After examination the document should be heat sealed. The work area should be disinfected and the lab coat placed in a biohazard bag and sent to the laundry. The gloves must be placed in a properly labeled biohazard disposal after the examination is concluded.
3. Evidence submitted requesting a latent print examination should be placed in a plastic or mylar sheet protector covering the evidence. In this case, item and examiner identifying marks should be placed on the protective sheet.

SPECIMEN(S):

1. An item containing an unknown/questioned entry.
2. Sufficient standards from a suspect printer and suspect computer, if available

SUPPLIES REQUIRED:

Paper, photocopies of evidence or photocopied or photograph enlargements of evidence

APPARATUS REQUIRED:

Stereoscopic microscope, sufficient light sources, computer, printer

CALIBRATION REQUIREMENTS:

No special calibration beyond routine maintenance is required.

PROCEDURE:

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QD14 Paper Examinations

1. The evidence is marked with the appropriate item number as it appears on the Laboratory transmittal sheet, the case number, and the examiner's initials or other mark. Items on the transmittal sheet may be amended by adding "Q" and "K" identifiers. Such amendments should be notated on a copy of the transmittal placed in the case jacket and the contributor should be notified via phone or email.

2. Make a visual examination of the paper (both with and without the microscope) for the following features:

- A) Color, brightness and opacity

- B) Texture or pattern on the paper
 - 1. Smoothness
 - 2. Web or wove sides

- C) Watermarks

- D) Weight and basis weight

- E) Size and shape of the paper

- F) How the edges were cut

- G) Fiber direction

3. Using the VSC 2000 and/or VSC 2000HR and/or Laser, examine the paper for the presence of the following:

- A. Fibers which fluoresce

- B. Fluorescence of filler, starch, etc. materials

- C. Wetting patterns

If desired by the examiner, a pH pen can be used to indicate whether the paper has been produced using an acid or basic process. It must be remembered that this may be considered a destructive process.

c) If desired, an ESDA examination can be made of the paper.

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- d) If more information needs to be obtained from the watermark for dating purposes, attempt to locate the manufacturer and obtain any relevant dating information. Lockwood's Directory can be helpful in obtaining the manufacturer's information.

4. Formulate a conclusion based on all the evidence examined.
5. A complete technical review is conducted by another qualified examiner and documented and initialed on Technical Case File Review Form.
6. Record findings in written form and have results recorded on a formal laboratory report.
7. The bases and reasons for the conclusion(s), opinion(s), or finding(s) should be included either on the examiner's worksheet or on photocopies and may be also included in the report.

DOCUMENTATION:

Work notes consisting of photocopies of a representative sample of the significant characteristics of the evidence on which the examiner marks similarities and/or dissimilarities together with the written observations of the examiner. Measurements from any test grids should be included.

A Questioned Document Worksheet will accompany each case and should include the equipment and/or procedures used, the identifying or eliminating features, and the results of analysis.

REFERENCES:

ASTM 2331 (current edition) Standard Guide for Examination of Altered Documents

Various professional papers written on various aspects of computer printers.

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Laboratory Services
Policies and Procedures Guidelines
Questioned Document Section
QD15 Impression Devices Examinations

PRINCIPLE:

To determine, if possible, if a device made an impression(s) or whether or not two or more impressions were the result of a common device. These devices can include checkwriter machines, stamps of various types and dry seals.

SPECIAL HANDLING:

1. Evidence containing body fluids that is received in the Document Section should be dried under a hood and then repackaged in a paper box or envelope. Items should be handled in order to prevent examiner exposure and preserve DNA, if requested by the submitter. Contents should be documented on the front of the packaging.
2. When handling a contaminated document the examiner must have on a lab coat and rubber gloves. The evidence should be opened and examined only under a biohazard safety hood. After examination the document should be heat sealed. The work area should be disinfected and the lab coat placed in a biohazard bag and sent to the laundry. The gloves must be placed in a properly labeled biohazard disposal after the examination is concluded.
3. Evidence submitted requesting a latent print examination should be placed in a plastic or mylar sheet protector covering the evidence. In this case, item and examiner identifying marks should be placed on the protective sheet.

SPECIMEN(S):

1. A questioned impression and known stamp, or
2. Two or more questioned impressions, or
3. Two or more questioned impressions and known stamp

APPARATUS REQUIRED:

Stereo microscope, hand magnifier, sufficient light source(s), UV wavelength source, VSC2000HR

PROCEDURES:

1. Examine the questioned and known impressions for the following characteristics:
 - A. Presence of ink(s)
 1. What colors are present?
 2. Are the questioned and known inks similar in color and reactivity?

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3. Does the ink come from an inked roller or ribbon?
 4. Is there any unusual blending or bleeding of the ink?
 5. Is the ink being deposited in its normal location?
-
- b. Does the checkwriter shred, tear or perforate the document?
 - c. What are the shapes of the letters/numbers and what sort of pattern is used to produce them?
 - d. Is a removable prefix, etc. present?

B. After the examination, determine whether the suspected checkwriter qualifies as a source of the impressions on the questioned documents. If it does, then evaluate the characteristics seen and determine whether they are indicative of class characteristics or individual characteristics.

Individual characteristics may include patterns of unevenness of perforation and shredding patterns or inking errors. Broken or damaged letters/numbers may leave identifiable defects in the checkwriter impressions.

C. Incorporate the information into a questioned document examination or issue a report.

If a suspect check writer has not been found or submitted, the reference files or Tom Vastrick's monograph/article "Checkwriter Identification" can be consulted for any possible manufacturers or sources. This article is also a resource for helping identify class or individual characteristics for checkwriter impressions.

Stamps

- A. Examine the questioned and known impressions for the following characteristics:
 1. Ink type and color
 2. Any "defects" or wear patterns

For apparent "defects", the original stamp should be examined to make sure it is not a class characteristic.

Many notary stamps have pre-set borders which may look like they contain possible individual defects. However, the border may appear on many stamps with only the interior material changed.

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3. Type of stamp used (rubber, synthetic, metal, etc.)
 4. Make sure the stamped impression is not the product of a hand duplicator
 5. Check to make sure the spatial relationships of printing areas is consistent between the impression(s) and the stamp
- B. After the examination, determine whether the suspected stamp qualifies as a possible source of the stamped impression(s). If so, determine whether the pattern of characteristics noted is consistent with class characteristics or individual characteristics.
- C. Either incorporate the finding into a questioned document examination or issue a report.

If a known stamp was not submitted, determine whether there is any investigative information that may be obtained from the stamped impressions.

Dry Seals

- A. Examine the dry seal impression(s) for the following characteristics:
1. Depth and quality of the impression
 2. Any "defects" or wear patterns
- Check possible "defects" against the original seal to make sure they are individual and not class characteristic.
3. Characteristics of the dry seal
 4. Check the "fit" of the two parts of the dry seal
- B. After the examination, check to see if the suspect seal could have produced the questioned seal. If so, determine whether the pattern of characteristics present is class characteristic or an individual pattern.
- C. Arrive at a conclusion based on the examination.
- D. Report the results of these procedures as appropriate.

If the suspected dry seal has not been found or submitted, see if there is any investigative information present.

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2. If none of the known specimen impressions are suitable for comparison and no others are obtained, discontinue these procedures and report accordingly.
3. Conduct a side-by-side comparison of the questioned impressions, or the questioned impression to the known impressions and/or to the rubber stamp(s).
4. Compare class characteristics (e.g., size, type style, text, shape). If different, discontinue and report accordingly.
5. Compare individualizing characteristics in common such as wear and damage defects, reproducible blemishes, impression voids, improper and extraneous inking, or coincidental peripheral printing (use transparency overlays when needed).
6. Evaluate similarities, differences, and limitations. Determine their significance individually and in combination. Consideration should be given to the possibility that a rubber stamp can be manufactured which duplicates the impressions of another stamp, and that various forms of simulations, imitations, and duplicates of rubber stamps or rubber stamp impressions can be generated by computer and other means.
7. Make written notes on photocopies and/or worksheet(s) of a representative sample of the significant characteristics of the evidence documenting similarities and dissimilarities of each item.
8. Formulate a conclusion based on all the evidence examined.
9. A complete technical review is conducted by another qualified examiner and documented and initialed on Technical Case File Review Form.
10. Record findings in written form and have the results recorded on a formal laboratory report.
11. The bases and reasons for the conclusion(s), opinion(s), or finding(s) should be included either on the examiner's worksheet or on photocopies and may be also included in the report.

REFERENCES

ASTM E2285 (current edition) – Standard Guide for Examination of Mechanical Checkwriter Impressions

ASTM E2286 (current edition) – Standard Guide for Examination of Mechanical Dry Seal Impressions

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Various professional papers on aspects of impression examinations.

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QD16 Line Sequence Examinations

PRINCIPLE:

To determine, if possible, the sequence of application of a given line of writing, typewriting, or toner came before another line of similar or different type (or crease).

SPECIAL HANDLING:

1. Evidence containing body fluids that is received in the Document Section should be dried under a hood and then repackaged in a paper box or envelope. Items should be handled in order to prevent examiner exposure and preserve DNA, if requested by the submitter. Contents should be documented on the front of the packaging.
2. When handling a contaminated document the examiner must have on a lab coat and rubber gloves. The evidence should be opened and examined only under biohazard safety hood. After examination the document should be heat sealed. The work area should be disinfected and the lab coat placed in a biohazard bag and sent to the laundry. The gloves must be placed in a properly labeled biohazard disposal after the examination is concluded.
3. Evidence submitted requesting a latent print examination should be placed in a plastic or mylar sheet protector covering the evidence. In this case, item and examiner identifying marks should be placed on the protective sheet.

SPECIMEN(S):

1. An item containing an unknown/questioned entry.
2. Sufficient standards from a suspect printer and suspect computer, if available

SUPPLIES REQUIRED:

Paper, photocopies of evidence or photocopied or photograph enlargements of evidence

APPARATUS REQUIRED:

Stereoscopic microscope, sufficient light sources, VSC 2000HR, computer and scanner, printer

CALIBRATION REQUIREMENTS:

No special calibration beyond routine maintenance is required.

PROCEDURE:

Bureau of Alcohol, Tobacco, Firearms and Explosives
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QD16 Line Sequence Examinations

1. The evidence is marked with the appropriate item number as it appears on the Laboratory transmittal sheet, the case number, and the examiner's initials or other mark. Items on the transmittal sheet may be amended by adding "Q" and "K" identifiers. Such amendments should be notated on a copy of the transmittal placed in the case jacket and the contributor should be notified via phone or email.
2. If possible, determine the direction of the stroke(s). If the examination of the writing involves a ball point type of writing instrument, observe the "burr striations" which may be present. The "burr striations" will run toward the outside edge of the curve in the direction the pen was moving. Observe the "gooping" of ink after a change in direction of the pen. Determine which side of the paper fibers the ink or carbon deposits pile up against (on the side opposite the direction of travel).
3. Examine the line intersection using the microscope, VSC 2000 and/or VSC 2000HR and/or Laser/alternate light source. Check for differences in inks used and check to see if material from the first writing is dispersed or redistributed along the later line.
4. Examine the paper surface to determine if paper fibers are dislodged, displaced or distorted in such a way as to show writing sequence.
5. Examine the depressions in the paper formed by the writing instruments to see if the continuity or interruption of the wall or trough indicates line sequence. Observe skipping of the later stroke, narrowing of the later stroke where the two lines meet and ink loading.
6. Examine the reverse side of the document at the line crossing.
7. If the line crossing involves carbon typewritten impressions, lifting of the carbon may be necessary. However, this is a destructive process and the necessary approval must be obtained before destructive testing can be done.
8. Examine folded and creased areas of paper where line sequence is questioned by noting any breakage of the ink line, skipping or "globbing" of the ink or leaching out of the ink into the disturbed paper fibers.
9. The Electrostatic Detection Apparatus (QD-002) may be used in the determination of line sequence by seeing if it can determine which writing impressions give a continuous impression on the ESDA prints.
10. Many factors influence the determination of line sequence problems and this type of examination warrants extreme caution. Some of these factors include, but are not limited to, the fluidity and drying time of writing materials and ink, pressure used to produce lines, colors of the ink (dark

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lines almost always appear to be on top, even when they are not) and the particular combination of paper, pens, pencil, carbon, etc. used.

11. Arrive at a conclusion based on the examination.
12. Report the results of these procedures as appropriate.

DOCUMENTATION:

Work notes consisting of photocopies or micro photographs of significant characteristics of the evidence on which the examiner marks evidence of sequencing together with any other written observations of the examiner.

A Questioned Document Worksheet will accompany each case and should include the equipment and/or procedures used, the identifying or eliminating features, and the results of analysis.

REFERENCES:

ASTM 1422 (current edition) Standard Guide for Test Methods for Forensic Writing Ink Comparison

Various professional papers written on various aspects of computer printers.