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Standard Guide for Examination of Dry Seal Impressions[1]

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1. Scope

1.1 This guide provides procedures that should be used by forensic document examiners (Guide E444) for examinations and comparisons involving dry seal devices and their impressions.

1.2 These procedures are applicable whether the examination(s) and comparison(s) is of questioned and known items or of exclusively questioned items.

1.3 These procedures include evaluation of the sufficiency of the material available for examination.

1.4 The particular methods employed in a given case will depend upon the nature and sufficiency of the material available for examination.

1.5 This guide may not cover all aspects of particularly unusual or uncommon examinations.

1.6 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory requirements prior to use.*

2. Referenced Documents

2.1 *ASTM Standards:*[2]

E444 Guide for Scope of Work of Forensic Document Examiners

E1658 Terminology for Expressing Conclusions of Forensic Document Examiners

E1732 Terminology Relating to Forensic Science

E2195 Terminology Relating to the Examination of Questioned Documents

3. Terminology

3.1 *Definitions*—For definitions of terms in this guide, refer to Terminology E1658, Terminology E1732, and Terminology E2195.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *dry seal, n*—a non-inked mechanical device which embosses a design on paper.

3.2.2 *embossment variation, n*—non-uniformity of the dry seal impression on the paper stock. It can be caused by the manner of application or by defects in the dry seal.

3.2.3 *impression, n*—an image formed by pressure.

4. Significance and Use

4.1 The procedures outlined here are grounded in the generally accepted body of knowledge and experience in the field of forensic document examination. By following these procedures, a forensic document examiner can reliably reach an opinion concerning whether two or more dry seal impressions have a common origin, or if a dry seal impression was created by a specific dry seal device.

5. Interferences

5.1 Items submitted for examination may have inherent limitations that can interfere with the procedures in this guide. Limitations should be noted and recorded.

5.2 Limitations can be due to submission of non-original documents, limited quantity or comparability, or condition of the items submitted for examination (for example, distorted impressions, partially imprinted impressions, or variations in surface texture). Such features are taken into account in this guide.

5.3 The results of prior storage, handling, testing, or chemical processing (for example, for latent prints) can interfere with the examination of certain characteristics. The effects can include, but are not limited to, flattening of the embossment or impression, partial destruction of the paper, and stains. Whenever possible, document examinations should be conducted prior to any chemical processing. Items should be handled appropriately to avoid compromising subsequent examinations.

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[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

5.4 Consideration should be given to the possibility that a dry seal device can be manufactured which duplicates the impressions of another dry seal.

6. Equipment and Requirements

6.1 Appropriate light source(s) of sufficient intensity to allow fine detail to be distinguished.

NOTE 1—Natural light, incandescent or fluorescent sources, or fiber optic lighting systems are generally utilized. Transmitted illumination, side lighting, and vertical incident lighting have been found useful.

6.2 Magnification sufficient to allow fine detail to be distinguished.

6.3 Other apparatus as appropriate.

6.4 Imaging or other equipment for recording observations as required.

6.5 Sufficient time and facilities to complete all applicable procedures.

7. Procedure

7.1 Perform all procedures when applicable and note each when appropriate. These procedures do not have to be performed in the order given.

7.2 Document the examinations performed, the relevant observations, and the results.

7.3 At various points in these procedures, a determination that a particular feature is not present or that an item is lacking in quality or comparability can indicate that the examiner should discontinue or limit the procedure(s). It is at the discretion of the examiner to discontinue the procedure at that point and report accordingly or to continue with the applicable procedures to the extent possible. Document the reasons for such a decision.

7.4 Determine whether the submitted questioned impression(s) were produced by a dry seal device. If the questioned impression was not created by a dry seal device, discontinue examination and report accordingly.

7.5 Determine whether the examination is a comparison of questioned impressions; a comparison of a questioned impression(s) with a known impression(s); or a comparison of a questioned impression(s) with a dry seal device.

7.6 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 embossing or condition of the document.

NOTE 2—The original is usually necessary for the examination of individualizing characteristics.

NOTE 3—Limited sufficiency and comparability of the impressions can be a restrictive factor in an examination and its conclusions but does not necessarily require the discontinuation of the examination.

7.7 If no known specimen impressions or dry seal device(s) were submitted, go to 7.13.

7.8 If a known document(s) is submitted, determine whether the known document(s) is suitable for examination, or comparison, or both. If it is not suitable, discontinue the procedure and report accordingly. Factors that affect the suitability include clarity, detail, or condition of the document.

7.9 If the original is not submitted, evaluate the quality of the best available reproduction to determine whether significant details have been reproduced with sufficient clarity for comparison purposes and proceed to the extent possible. If the reproduction is not of sufficient clarity for comparison purposes, discontinue these procedures and report accordingly.

7.10 If a dry seal device(s) is submitted, its condition should be noted (for example, clean, dirty, worn, damaged).

7.10.1 Note, when applicable, class characteristics (for example, typeface design and size).

7.10.2 Note any visible features that reproduced on the impression.

7.10.3 Prepare appropriate specimens, as needed.

7.11 Determine if any of the known specimen impressions are suitable for comparison.

7.12 If none of the known specimen impressions are suitable for comparison and no others are obtained, discontinue these procedures and report accordingly.

7.13 Conduct a side-by-side comparison of the questioned impressions, or the questioned impression to the known impressions and/or to the dry seal device(s).

7.13.1 Compare class characteristics (for example, impression format, typeface design, other present designs and relative sizes). If different, discontinue and report accordingly.

7.13.2 Compare individualizing characteristics in common such as wear and damage defects, embossment variation patterns.

7.14 Evaluate similarities, differences, and limitations. Determine their significance individually and in combination.

7.15 Reach a conclusion and report accordingly.

8. Report

8.1 Conclusion(s) or opinion(s) resulting from the procedures in this guide may be reached once sufficient examinations have been conducted. The number and nature of the necessary examinations is dependent on the question at hand.

8.2 The bases and reasons for the conclusion(s), opinion(s), or finding(s) should be included in the examiner's documentation and may also appear in the report.

8.3 *Identification*—When the examination reveals no significant, inexplicable differences between two or more items, and there is agreement in all individualizing characteristics, an identification is appropriate (that is, compared impressions or compared impression and dry seal contain substantial significant similarities; there are no significant, inexplicable differences; and no limitations associated with absent characteristics; and any possibility of a duplicate dry seal can be eliminated).

8.4 *Elimination*—If significant, inexplicable differences between two or more items are found at any level of the analyses, an elimination is appropriate (that is, the impressions contain substantial significant differences). There may be similarities.

8.5 *Qualified Opinions*—When there are limiting factors and the examination reveals similarities or differences of limited significance between two or more items, the use of qualified opinions can be appropriate (that is, the impressions or observed features contain limited similarities or differences; or limitations associated with absent characters, individualizing characteristics, or distorted impressions are present; or a combination of these). Qualified opinions require explanation of the limiting factors.

8.6 *No Conclusion*—When there are significant limiting factors, and the examination reveals no significant similarities or significant differences, a report that no conclusion can be reached is appropriate (that is, the impressions or observed features contain insufficient significant similarities and insufficient differences). This opinion requires explanation of the limiting factors.

9. Keywords

9.1 dry seal; dry seal impressions; forensic sciences; questioned documents