

## **Common methods of changes in the primary content of document details and signs of their detection**

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*Consideration of issues of making changes to the primary content of documents when using different methods, ways, various devices, materials, modern equipment and the emergence of new technologies. An overview of the main ways of changing the primary content of documents and the ways of their installation.*

*Keywords: making changes, postscript, reprinting, correction, chemical etching, washing, cleaning, erasing; replacement of parts of the document, preliminary technical preparation.*

### **Поширені способи внесення змін у первинний зміст реквізитів документів та ознаки їх виявлення**

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*Розглянуто проблему внесення змін у первинний зміст документів при використанні різних методів, способів, різноманітних пристосувань, матеріалів, сучасного обладнання та появи нових технологій. Оглянуто основні способи змін первинного змісту документів та шляхи їх Установлення.*

*Ключові слова: внесення змін; дописка; додрукування; виправлення; хімічне травлення; змивання, підчистка, стирання; заміна частин документа; попередня технічна підготовка.*

Today, modern expert practice in the technical and forensic investigation of documents shows that the common researches of document requisites are the establishment of signs with a changed primary content of documents, such as certificates, certificates, various preferential documents, certificates, receipts, etc. When making changes to the primary content of documents, various methods, methods, various devices, materials, as well as modern equipment are used. In the scientific literature, attention has already been paid to the main ways of changing the primary content of documents, but the rapid development of the field of high technologies and the emergence of new ways of making changes to documents require improvement, and this is the relevance of the chosen topic.

Since with such production of documents, printing methods have different reproduction capabilities, different labor intensity and high cost of processes, provide different level of requirements for print quality, therefore criminals often use low quality materials and cheap methods of reproducing printing methods, and it is not possible to reproduce the absolute accuracy of the means of protection, which allows to detect the fact of making a complete change.

When the fact of printing methods and means of protection is not revealed, but there is a fact of partial changes to the primary content of the original document, then the changes made by cleaning, erasing,

chemical etching, washing out the text, additions, reprinting, correction of the text, replacement of parts are common document, establishing the method of applying signatures, imprints of seals and stamps. Each of the above methods has a set of features that make it possible to establish by what means or with the help of which methods and means changes were made to the original content of the document.

Signs of cleaning and erasure are: raggedness of the fibers of the surface layer of paper, change in the gloss of the paper surface, decrease in the thickness of the paper in the place of cleaning, violation of the background grid, remnants of coloring matter of the strokes of the cleaned text, blurring of the coloring matter of the new text.

Detection of signs of cleaning, erasure is carried out by microscopic examination of the document in ordinary scattered, obliquely directed, transmitted light, in ultraviolet and infrared rays.

But restoring the original meaning is quite difficult and depends on the degree of destruction of the surface layer and the properties of the primary strokes when working in different modes of light filters (color, depression of strokes).

With chemical etching, the text of the document is completely or partially discolored or washed away by some chemical reagent, and solvents do not destroy or discolor strokes, but wash out the coloring matter.

Signs of reprinting are discrepancies in the location of printed characters in relation to lines, differences in the size and configuration of printed characters of the same name, differences in the microstructure of strokes of printed texts, differences in defects inherent in printed devices.

Signs of replacing parts of the document. In many documents, photo cards, sheets, numbers and series of documents can be replaced. Both a photo card and sheets can be replaced in identity documents. The replacement of the photo card can be done in different ways: in its entirety, leaving the part with the imprint of the seal or separating the emulsion layer. Missing parts of imprints of mystical and metal seals are placed on the pasted photo card by overdrawing and pressure. The use of ultraviolet rays can reveal differences in the luminescence of the paper and the dye of the strokes of the text, etc. [1].

The most common way of making changes to a document is to make impressions of seals and stamps by mounting or imitating in various ways. In expert practice, a number of methods of applying seals and stamps are known, in particular, copying from another document, mounting using two different clichés, using computer technologies and printing equipment (electrophotographic method, inkjet method, etc.), making a home-made cliché. Research of seal impressions and stamps consists in the study of general and specific features. Common features characterize group features, and their own — individual features that make it possible to identify the object.

The study of signatures with preliminary technical preparation in documents requires, first of all, establishing the method of its execution. The technical reproduction of a signature should be understood as its implementation using technical

techniques in order to obtain the maximum similarity with the real one.

The fastest way to reproduce a signature is to imitate it using computer and duplicating equipment. So, after scanning the signature, processing it with a special program, it is printed on the required document. Such a signature will be flat, with uneven edges, have variable stroke widths, breaks in strokes and discrete structure, etc. Such a technique leaves behind individual signs caused by the specifics of the work of trace-forming components (for example, a cartridge), structural features of the equipment, and signs that appeared during operation [2].

As a result of the above, it can be concluded that during the examination of the main ways of changing the primary content of documents, the authors identified and supplemented the most common ways and analyzed their special features. We also considered the ways of their establishment, considered a number of specialized terms, without knowledge of which it is impossible to conduct a complete and high-quality research. The analysis of this issue is that the use of various methods, methods, various devices, materials, modern equipment and the emergence of new technologies makes it possible to detect the facts of changes to documents in a timely manner during research and examinations.

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### «Bosch crash data retrieval system» — aspects of practical use in car accidents investigations

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*This article presented the necessity to use modern equipment to get reliable data for vehicle accident reconstruction.*

*Keywords: event data recorder; vehicle; crash data retrieval; speed; report; investigation.*

### Система «Bosch crash data retrieval» — аспекти практичного використання під час розслідування ДТП

*Відас Лейпус*

*Ця робота представляє необхідність використання сучасного обладнання для отримання достовірних даних для реконструкції ДТП.*

*Ключові слова: реєстратор даних про події, транспортний засіб, пошук даних про ДТП, швидкість, звіт, розслідування.*