



Questioned Documents Examination

Test No. 26-5211 Summary Report

Each sample pack consisted of one questioned Last Will and Testament (Item Q1), which participants were asked to review to determine to what degree can it be confirmed or refuted that the questioned document has been altered. Data were returned from 175 participants and are compiled into the following tables:

	<u>Page</u>
<u>Manufacturer's Information</u>	<u>2</u>
<u>Summary Comments</u>	<u>3</u>
<u>Table 1: Examination Results</u>	<u>4</u>
<u>Table 2: Methods and Observations</u>	<u>7</u>
<u>Table 3: Conclusions</u>	<u>73</u>
<u>Table 4: Additional Comments</u>	<u>96</u>
<u>Appendix: Data Sheet</u>	

This report contains the data received from the participants in this test. Since these participants are located in many countries around the world, and it is their option how the samples are to be used (e.g., training exercise, known or blind proficiency testing, research and development of new techniques, etc.), the results compiled in the Summary Report are not intended to be an overview of the quality of work performed in the profession and cannot be interpreted as such. The Summary Comments are included for the benefit of participants to assist with maintaining or enhancing the quality of their results. These comments are not intended to reflect the general state of the art within the profession.

Participant results are reported using a randomly assigned "WebCode". This code maintains participant's anonymity, provides linking of the various report sections, and will change with every report.

Manufacturer's Information

Each sample pack contained one questioned Last Will and Testament, consisting of four pages. Participants were asked to review the will to determine if there were any signs of alteration that would support the late Stanley Olson's daughter, Jasmine Olson's claim.

SAMPLE PREPARATION:

A collated four-page will was printed on 20 lb. paper with a brightness rating of 92 using an HP LaserJet printer. While stacked together, the upper-left corners of all four pages were manually stapled using a Swingline stapler.

For each stapled stack of four original pages, the will was opened to the third page, the upper left fold purposefully creased flat, and placed on a full notepad. One individual signed the designated signature line while the remaining pages stayed beneath that page. The stack was then flipped to the fourth page, with upper left fold again purposefully creased flat, and placed on a full notepad, where two additional individuals signed their respective signature lines. The stack was then flipped back to the first page.

Following the initial printing and stapling, the text within "Article I" was modified in Adobe Acrobat to add Bradley Olson as a beneficiary entitled to receive a distribution and to remove the statement indicating that Bradley was intentionally excluded. The font size of the text under Article I was changed from 11-point to 11.5-point font, resulting in a narrower right-side margin. The modified first page was then printed using the same paper and printer.

For each stapled set of four original pages, the original staple and first page were carefully removed and discarded. The modified first page was then placed in front of the collated pages 2 through 4, and each set was manually re-stapled using the same Swingline stapler.

SAMPLE PACK ASSEMBLY: After visual quality inspections of the questioned items were complete, each item was packed into a pre-labeled envelope with protective chipboard and sealed.

VERIFICATION: Predistribution results were consistent with each other and the manufacturer's preparation information that the Last Will and Testament was altered. The predistribution participants supported their conclusions by identifying the following observable differences: staple holes, creased corners, margins, and indentations.

Summary Comments

This test was designed to allow participants to assess their proficiency in determining whether a document was altered. Participants were supplied with one questioned document, a 4-page Last Will and Testament (Item Q1), and asked to review the pages to determine to what degree can it be confirmed or refuted that the questioned document has been altered. Item Q1 was altered by replacing the original page 1 with a different page 1. Refer to the Manufacturer's Information for preparation details.

Of the 175 participants, 164 (96%) reported that Q1 has been altered ("A", 148 participants) or probably has been altered ("B", 16 participants). To support their conclusions, a majority of participants observed staple hole discrepancies. Additionally, they cited page substitution, differences in formatting, margins, and fonts, and a lack of a fold/crease near the staple. The majority of participants did not detect signature indentations on page one that were present in pages 2-4, supported by ESDA. Differences in paper/optical properties were also observed; some participants stating that page one responded differently under infrared luminescence, transmitted light, or UV, suggesting this page originated from a different source.

Five participants (3%) reported that the item has not been altered ("E", 3 participants) or probably has not been altered ("D", 2 participants). Among these participants, all found the printed text to be unaltered and signatures original, and none reported paper optical differences. One participant listed that their examination scope is limited to direct textual/material alteration detection. None of the five participants reported the use of an ESDA in their examination.

Two participants (1%) reported that they cannot determine whether or not the document has been altered ("C"). Both noted discrepancies between the paper types of the pages but reported inconclusive results given that the scenario does not provide information about whether the pages were stapled together at the time of signing.

Four participants did not provide a response, all noting that their laboratory scope does not allow them to render a conclusion on the alteration of a document.

The most utilized methods of analysis among participants were Video Spectral Comparator (VSC), ESDA, Macroscopic and/or Microscopic Examination, and Visual Examination.

Examination Results

Based on the findings of your examination, to what degree can it be confirmed or refuted that the questioned document has been altered?

TABLE 1

WebCode	Q1	WebCode	Q1	WebCode	Q1
2AEG49	A	6TGBLP	B	ANAE4K	A
2E9J6N	A	6XFMGP	A	ANPVYD	A
2G7N4V	A	74WHXK		ATJRLJ	A
2UMJ4Y	A	768KL4	A	AXZWKE	A
394RMH	A	772BRH	A	B2WZP7	B
3DETY9	A	7V3D74	A	BAMLTJ	A
3DU9RG	A	7V7WU8	A	BB26GM	A
3DU9U3	A	7ZDMYX	A	BFTEPZ	E
3HAJ7K	A	87JGTU	A	BK9PZH	A
3P8AQV	A	88RVXE	A	BUVNT9	A
43DRXP	A	8BTUBT	A	C4JRK9	A
46YTH3	A	8ET67T	A	CGJX7R	A
47C3TN	A	8F6KY9	A	CLY9GA	A
4DPELF	A	8FA6LB	B	CPYJCA	A
4MYGA2	D	8FNN9U	A	D27P6N	A
4NVWLY	B	8G2DFC	A	D8WYDZ	B
4XXGKK	A	8J9FJW	A	DD4R8W	A
63LFD7	A	8TUGZ7	A	DNKA2N	B
63MDN3	B	8UQZ28	A	DQN6KR	A
643D77	A	8X7RQE	A	DWCV62	A
69DNYZ	A	9KY2N8	A	E3WBBJ	B
6E4ZX3	A	9QLRB3	A	E9NHUT	B
6FYFAZ	A	9T6ZYU	A	EGW9WV	E
6JV8FB	A	A3XEYT	A	ENFEVM	A
6N6KXA	A	A89LEQ	A	EUL9PJ	A
6P22B8	B	AE4RTY	A	FEMH8R	A

TABLE 1

WebCode	Q1	WebCode	Q1	WebCode	Q1
FK8JM6	A	M4YX4F	A	RZ4ZGK	A
FKC4B8	A	M4YZTK	A	RZNFU2	A
GBFMY9		MH7QVT	E	T8KT8A	A
GCB7ZA	A	MHHPQ2	A	TB23HT	A
GL3NG4	A	MXT7W4	A	UANNQD	A
GLX6TZ	A	N2PEG6	A	UMDP8J	A
H6Q8A2	A	N8ERHR	A	UU9R9V	A
HCRMV3	A	N9ABJU	B	UUCCWY	A
HDM38Z	A	NALAE3	A	V63KWC	A
HGLJH9	A	NE2KR7	A	V7JGMQ	A
HLWQLX	A	NEG2NK	A	VA2YJ3	A
HUVA73	A	NHGCHY	A	VAJQV8	A
HZY3EC	A	NJWC2N	B	VBE9W9	A
HZYZP8	A	NV2PWU	A	VZT8EE	A
J3K8MA	B	NZF7RD	A	W2JQV7	A
JFK3K2	A	P2PU4P	A	W2MAJ9	C
JN47UP	A	P67Y3K	A	WQMMPQ	A
JNYRLV	B	P96DNN	A	WRWR3E	A
JXPDP9	A	PAZWPP	A	WVGJEH	A
KC2BAY	A	PJ3D2T	A	XB4JHL	A
KC7R8X	A	PK3E3D	A	XGBZZM	A
KKDL2Q	A	PN2RLW	A	XT9QYA	A
KUZQ86		PNHNEW	A	XW86KD	A
KYFV9K	A	Q66LVH	A	Y7N96H	A
KZCCKH	A	QWAJQK	A	Y8YBRG	A
L87ZC7	A	R7QRQY	B	YKP62P	A
LDVDFF	A	RB7XQE	A	YP6EET	B
LQJFWL	A	RDAT9W	A	YR8DPL	D

TABLE 1

WebCode	Q1	WebCode	Q1	WebCode	Q1
YR8DR8	A				
YV7NM8	A				
YW28P9	C				
Z2CK6L	A				
Z2CMUQ					
Z4JZDD	A				
ZF9Y3U	A				
ZMA9B9	A				
ZMAB2C	A				
ZMQ8QQ	A				
ZN7RDA	A				
ZRLWC6	A				
ZUTEAZ	A				

Response Summary - Q1Participants: **171** [No Response: **4**]

Based on the findings of your examination, to what degree can it be confirmed or refuted that the questioned document has been altered?

<u>Response</u>	<u>Count</u>
-----------------	--------------

A	148
B	16
C	2
D	2
E	3

Response Key

- A. The questioned document HAS BEEN ALTERED.
- B. The questioned document HAS PROBABLY BEEN ALTERED.
- C. CANNOT DETERMINE whether or not the questioned document has been altered.
- D. The questioned document HAS PROBABLY NOT BEEN ALTERED.
- E. The questioned document HAS NOT BEEN ALTERED.

Methods and Observations

What methods/techniques did you utilize? What observations were made from each method/technique?

TABLE 2

WebCode	Methods/Techniques	Observations
2AEG49	ACE-V Methodology	Document is altered.
	Video Spectral Comparator (VSC)	Perforation marks of two stapler pins were observed on pages no. 02, 03 & 04 while perforation marks of only one stapler pin were observed on page no. 01. Paper folding has been observed on top left corner of pages no. 02, 03 & 04 while no such paper folding has been observed on page no. 01.
	ESDA	Indentations corresponding to handwritten signature on page 03 of questioned document were developed on pages no. 04 & 02. Indentations corresponding to handwritten signatures on page 04 of questioned document were developed on pages no. 02 & 03. Indentations corresponding to handwritten signatures on pages no. 03 & 04 of questioned document were not developed on page 01.
2E9J6N	Microscopic Examination	First, the document was examined as delivered, without separating the pages. There are additional perforations caused by staples visible on pages 2, 3 and 4, which are not seen on page 1. All pages were printed in laser printing using black toner.
	ESDA	Next, the pages were separated and ESDA was performed. On pages 2 and 3 latent indented impressions of the witness' signatures from page 4 are visible. On page 4 a latent indented impressions of the signature of the testator from page 3 is visible. Page 1 shows no latent indented impressions.
	Video Spectral Comparator (VSC)	The paper of pages 1 to 4 were examined in the VSC using varying light sources. The papers designated 2-4 are identical to each other in their opticalphysical properties. The paper designated page 1 differs from the remaining papers (pages 2-4) in its optical-physical properties, such as cloudiness, IR fluorescence, and UV fluorescence.
	Transmitted Light	The positioning of the text "Page X of X" on page 1 is slightly offset compared to pages 2, 3 and 4. For pages 2, 3 and 4 this text is positioned identically.
2G7N4V	Visual Examination	Additional staple holes noted on pages 2,3 and 4. No additional holes on page 1 Different font size noted on line beginning "The names of my children are.." on page 1. Different margin size at end of the above line. Different font noted for the "I" on line beginning "I direct that my just debts.."
	Video Spectral Comparator (VSC)	Different IR reaction for page 1 paper compared to pages 2,3 and 4. Measuring tools were used to compare font sizes
	Indented Writing	No impressions were noted on pages 1, 2 and 3. Impressions of signature from page 3 observed on page 4.
	Overlays	Different font size noted on line beginning "The names of my children are.." on page 1.
	Microscopic Examination	Document examined to confirm some of the above observations
	Ruler	Used to measure the margin sizes.
2UMJ4Y	Flood light, transmitted, ultraviolet and white spot	Examination under flood light, transmitted light, ultraviolet and white spot revealed inconsistencies in the staple hole pattern. "Page 1 of 4" does not correspond with "Page 2 of 4" to "Page 4 of 4".

TABLE 2

WebCode	Methods/Techniques	Observations
	ESDA	ESDA examination revealed the absence of indented signatures impressions on "Page 1 of 4", whereas indented signatures impressions are present on "Page 2 of 4" to "Page 4 of 4".
	Spot fluorescence light	Examination under spot fluorescence light revealed differences in fluorescence in that "Page 1 of 4" fluoresces differently from "Page 2 of 4" to "Page 4 of 4".
	Microscopic Examination	Examination under magnification revealed a difference in that the right margin alignment of the text on "Page 1 of 4" extends further towards the right margin compared to "Page 2 of 4" to "Page 4 of 4".
394RMH	Video Spectral Comparator (VSC)	- Four extra perforations were observed in the upper left corner of the sheets; however, in the corner corresponding to sheet 1 (page 1 of 4), there are only two perforations. In addition, this edge or corner has a fold with a spine of a different length than the folds located on the rest of the sheets.
	ESDA	- Indented marks corresponding to the signatures stamped on sheets 3 and 4 (page 3 of 4 and page 4 of 4), on pages 2 of 4, 3 of 4 and 4 of 4, but not on page 1 of 4, in which no indented marks of any signature and/or writing were found.
	Macroscopic/Microscopic Examination	
3DETY9	Visual and low power microscopy	There are two sets of staple holes in the top left corner of pages 2, 3 and 4 of the Will but only one set in page 1. There are diagonal fold lines in the top left corner of pages 2, 3 and 4 but not page 1. The printing on all four pages is dry toner but the quality of the printing or possibly the font on page 1 appears different from that on pages 2, 3 and 4. For example, the horizontal line of the e differs in thickness.
	Video Spectral Comparator (VSC)	No differences in the UV fluorescence of the paper found.
	ESDA	There are indentations of the two signatures written on page 4 in pages 2 and 3 but not in page 1. This indicates that these signatures were written whilst page 4 was resting on pages 2 and 3 but not page 1. There are indentations of the signature on page 3 indented into the fronts of pages 4 (clear) and 2 (faint) but not in page 1. This indicates this signature was written whilst resting on pages 4 and 2 but not page 1. The indented signatures align with the written signatures indicating the pages were stacked one on top of the other when signed.
3DU9RG	Visual Examination	- Questioned document is a 4 page printed document, all 4 pages are stapled. - On pages 2-4, there are 2 set of staples where there is only 1 set of staples on page 1. - Original signatures can be found on page 3 and 4 - The corners of pages 2-4 are fold and creased.
	Microscopic Examination	- All pages are printed using black toner only - No CPS Codes found - High amount of toner particles surrounding characters
	MagMouse	- All 4 pages positive with magmouse, indicating use of magnetic toner - All pages consistent with each other
	Video Spectral Comparator (VSC)	- Slight difference under spot fluorescence between pages 1 and pages 2-4 - All pages under other light sources react and have similar reaction, consistent among all 4 pages - No differences between 4 pages

TABLE 2

WebCode	Methods/Techniques	Observations
	Digital Examination/Photoshop	- No obvious visible misalignments between and within pages - Page number, font size and spacing generally all consistent within and between pages - Differences and Findings in Article 1, page 1 o Difference in Spacing between article 1 and 2 on page 1 larger (~4 lines) vs. all other articles (~2 lines) Line 1 of article 1 right line margin smaller and further to the right than the rest of the documents. When overlaid common words found on all pages – most align with similar font, size and spacing. But differences font size, spacing different on line 1 when compared to the rest of the document and page. When common words such as children, Cody, and Olson are overlaid and compared to the rest of the document, differences observed.
3DU9U3	Visual Examination	Page 1 of the document in question bears only one set of staple holes compared to the two sets on the rest of the pages. Page 1 of the document in question does not have the diagonal fold that is present in the top left corner of the rest of the pages. A formatting/spacing error occurs on page 1 of the document in question.
	ESDA	Indentations that would have been caused by the execution of the signatures on pages 3 and 4 are absent from page 1 of the document in question.
	Magnification	A different font is used for a letter “l” on page 1 of the document in question.
	Ultraviolet Light	Page 1 is a slightly different shade of blue under UV-illumination indicating a different type of paper to pages 2-4.
3HAJ7K	Visual Examination	Color differences between Q1 and Q2-Q4. Spacing and margin differences observed in Q1 that are not present in Q2-Q4. Two sets of staple holes on Q2-Q4, one set of staple holes in Q1. Fold at staple line on Q2-Q4, fold is not present on/at staple line in Q1.
	Microscopic Examination	Non-impact, dry toner on Q1-Q4, all signatures are original.
	Digital Imaging	Digital imaging of original documents, VSC findings.
	Ultraviolet Light	Q2-Q4 has brighter ultraviolet fluoresce than Q1.
	Oblique Light	No indented impressions observed.
	ESDA	Q1 (front and back) - Q4 (front and back) - positive no value. Q1 does not contain any impression of the signatures on Q3, Q4. Q2-Q4 contains the impressions of the signatures on Q3, Q4 which is consistent with stapled pages being together at time of signing. Q1 does not have impressions of a fold at the staple area. Q2-Q4 contains impressions of a fold at the staple area.
3P8AQV	Video Spectral Comparator (VSC)	Utilizing the flood light, color differences observed between Q1 and Q2-Q4. Utilizing the ultraviolet light, Q2-Q4 has brighter ultraviolet fluoresce than Q1.
	Macroscopic Examination	Physical and visual Examination: The forth page appear to have adjusted alignment while the remaining pages (1,2,3) aligned to the left. Palpation of the backside of signature (believed to be authored by Stanley Olson) present on page 3, reveal very high pen pressure.

TABLE 2

WebCode	Methods/Techniques	Observations
	Video Spectral Comparator (VSC)	Video-Spectral Comparator (VSC 8000/HS): Under oblique lighting, clear indentations consistent with high writing pressure were observed on the signature (believed to have been authored by Stanley Olson) on page 3. Detailed examination of the stroke movements revealed characteristics of slow execution, including the presence of blunt stroke endings. These features are indicative of a traced signature.
	Microscopic Examination	Examination of the stroke movements revealed characteristics of slow execution, including the presence of blunt stroke endings. These features are indicative of a traced signature.
43DRXP	Macroscopic Examination	The questioned documents, Q1.1, Q1.2, Q1.3, and Q1.4 were viewed macroscopically with ambient lighting. They all appear to be white sheets of copy paper that are the same in size. Q1.2, Q1.3, and Q1.4 all contain a diagonal fold line near the staple holes. Q1.2, Q1.3, and Q1.4 all appear to contain holes from two staples, whereas Q1.1 only contains holes from one staple. Q1.1 contains a line of text beginning, "The names of..." that appears to be a larger font size than the remaining text in the body of the documents, Q1.2, Q1.3, and Q1.4. Additionally, this line of text extends beyond the right margin for the remainder of the document and all the right margins for Q1.2, Q1.3, and Q1.4.
	Microscopic Examination	The questioned documents, Q1.1, Q1.2, Q1.3, and Q1.4 were examined microscopically using a Stemi 508 stereo microscope. The printed text on Q1.1, Q1.2, Q1.3, and Q1.4 appears to be produced using toner technology. Q1.3 contains a signature in black aqueous ink. Q1.4 contains a signature in black ballpoint ink and a signature in blue ballpoint ink.
	Video Spectral Comparator (VSC)	The paper reacts similarly when viewed with ultraviolet lighting. "Cody Olson" and "Jasmine Olson" from the line of text beginning, "The names of..." on Q1.1 was superimposed with Q1.2. This demonstrates that the font is of a larger size than the other text in the document series.
	Oblique Light	Oblique lighting was used to determine if apparent latent writing impressions were present on Q1.1, Q1.2, Q1.3, and Q1.4. Latent writing impressions appear to be present on Q1.3, and Q1.4.
	ESDA	Latent writing impression restoration was performed using the ESDA on the front and back of the questioned documents, Q1.1, Q1.2, Q1.3, and Q1.4. at 0 minutes humidity. Latent writing impressions were developed on the front and back side of Q1.2, Q1.3, and Q1.4. Latent writing impressions (LWI) developed on the front side of Q1.2 appear to be the signatures from Q1.3 and Q1.4. The LWI developed on the back side of Q1.2 appear to be faint impressions of the signatures on Q1.4. Latent writing impressions (LWI) developed on the front side of Q1.3 appear to be the signatures from Q1.4. The LWI developed on the back side of Q1.3 appear to be faint impressions of the signatures on Q1.4 and the impression of the signature on the front side of Q1.3. Latent writing impressions (LWI) developed on the front side of Q1.4 appears to be the signature from Q1.3. The LWI developed on the back side of Q1.4 appear to be impressions of the signature on Q1.3 and the impression of the signatures on the front side of Q1.4.
46YTH3	Visual Examination	Identify characteristics that indicate an alteration by removal or addition to identify possible interferences.
	Video Spectral Comparator (VSC)	Using magnifying glasses and a Digital Video Microscope (DVM) or Video Spectrocomparator (VSC), confirm or rule out signs of alteration and observe new signs of alteration.

TABLE 2

WebCode	Methods/Techniques	Observations
	Video Spectral Comparator (VSC)	Make use of the Video Spectrum Comparator (VSC), filters, and radiation sources in order to observe new signs of alteration.
47C3TN	Microscopic Examination	Using the stereomicroscope at 10X magnification, Each page of the document was examined. Trash marks were observed on pages 1-3, margin differences were observed on page 1 and on the page 3 signature inconsistent handwriting features were observed.
	Video Spectral Comparator (VSC)	Using the VSC 6000 the document was examined using Visible light, UV light 365 nm, IR 725-780nm, spot 445-465nm. There was observed fluorescence on page 4 and not page 3 signature.
	Magnification	Using the stereomicroscope at 10X magnification, Each page of the document was examined. Trash marks were observed on pages 1-3, margin differences were observed on page 1 and on the page 3 signature inconsistent handwriting features were observed. These were all photographed.
	Visual Examination	On the back of page 4, the fastening mark (staple) exhibits several holes and appears to have been re-stapled back together.
4DPELF	Visual Examination	1. Color of paper – all page 1, page 2, page 3 and page 4 are white in color 2. Color of ink of signature - Stanley Olson's signature: black - Andrea House's signature: blue - Chance Steele's signature: black
	ESDA	1. No indented writing was deciphered on page 1 of the will 2. Indented writing of Andrea House's signature, Chance Steele's signature and Stanley Olson's signature on pages 4 and 3 of the will respectively were deciphered on page 2 of the will 3. Indented writing of Andrea House's signature and Chance Steele's signature on page 4 of the will were deciphered on page 3 of the will 4. Indented writing of Stanley Olson's signature on page 3 of the will were deciphered on page 4 of the will 5. The mechanism when signing the will - the previous page is flip behind during signing the will, the outcome will be: a) The 1st page will have indented writing of Andrea House's signature, Chance Steele's signature and Stanley Olson's signature (did not match with the observation above) b) The 2nd page will have indented writing of Andrea House's signature, Chance Steele's signature and Stanley Olson's signature (matched with the observation above) c) The 3rd page will have indented writing of Andrea House's signature and Chance Steele's signature (matched with the observation above) d) The 4th page will have indented writing of Stanley Olson's signature (matched with the observation above) - Hence, the original 1st page should have all the three indented signatures, but no indented signatures observed. This indicated that the 1st page of will is not original page of the will.
	Video Spectral Comparator (VSC)	1. The first line text of 1st page was protrude out to right side and not aligned with the rest of the text 2. The text of page 2, 3 and 4 were all aligned with the rest of the text 3. The word "Will" was overlap within page 1 to page 4 and the result as follow: a) The word "Will" page 1 was not identical in alignment with page 2 b) The word "Will" page 1 was not identical in alignment with page 3 c) The word "Will" page 1 was not identical in alignment with page 4 4. The text on page 1 to page 4 were consistent being printed by using electrophotographic printing process. 5. The top edge of 1st page of the will was not aligned with the rest of the pages (pages 2 to 4) of the will 6. The number of staples hole for: - Page 1 – 3 holes (1 stapling pattern) Page 2 – 4 holes (2 stapling pattern) Page 3 – 4 holes (2 stapling pattern) Page 4 – 4 + 2 holes (back of the stapler cause extra two holes) (2 stapling pattern)

TABLE 2

WebCode	Methods/Techniques	Observations
4MYGA2	Visual Examination	- Pages 1-4 of item 'Q1' were intact bearing no physical tears, no crossings or erasures made to the typewritten content on each page. - The font type and size of the typewritten content on each page of the will was the same. - Similar margin habits and size seen on all four pages of item 'Q1'. - One set/pair of staple wire was seen on the left-hand corner of the document. No evidence of extra staple added to the document. - Uniform spacing seen between the sentences that follow each other in the same paragraph. Differences observed on the pages included; - The arrangement of text on the first paragraph of page 4 of 4 on item 'Q1' was justified. The text was evenly distributed between the margins producing clean crisp edges whereas on pages 1,2,3 (of 4) the text is aligned to the left margin. - Some inconsistencies were observed in the way the quotation symbols (" ") were used across pages 1- 4 of item 'Q1'.
	Infrared Light	- Under Infra-red oblique light, the signature entries on pages 3 and 4 produced indents from the writing implement confirming that a pen was used therefore the signatures were naturally made on the document.
	Macroscopic/Microscopic Examination	-Under high magnification (x59.15) the printed text on all pages 1,2,3,4 was had shiny black appearance of the characters with randomly scattered particles seen around the characters confirming that a similar printing technique was used -Similar paper fibre arrangement across all the pages was observed.
	Transmitted Light	- Under transmitted light, no paper fibre disturbance was seen on pages 1,2,3 and 4.
4NVWLY	VAACUM BOX	Traces of identical tools are visible on all four pages. On page 2, the three signatures are revealed. On page 3, the signatures from page 4 are revealed. On page 4, the signature from page 3 is revealed.
	Video Spectral Comparator (VSC)	All four pages react in the same way under UV or IR light. The four pages are printed using magnetic monochrome toner.
	Visual Examination	The text on page 4 is justified, but not the others. Pages 2, 3 and 4 have more staple marks than page 1.
4XXGKK	ESDA	Indented signature of Page 3 was lifted on Page 2 and Page 4 of Item Q1. Indented signatures of Page 4 were lifted on Page 2 and Page 3 of Item Q1. No indented signature was lifted on Page 1 of Item Q1.
	Video Spectral Comparator (VSC)	Transmitted light: No exclusionary differences between the four pages in Item Q1. Different frequency lighting: No exclusionary differences between the four pages and their prints in Item Q1.
	Thickness	No exclusionary differences in the thickness between the four pages in Item Q1.
	Visual Examination	Additional set of staple holes observed on Page 2 to Page 4 of Item Q1. The alignment and font size of the first sentence under "Article I" on Page 1 was different from the remaining sentences on Page 1 and all sentences on Page 2 to Page 4. The font used within each page was found to be inconsistent.
	Microscopic Examination	The intensity of the prints on Page 1 was different from those on Page 2 to Page 4.
63LFD7	Visual Examination	1- Perforations located in the upper left area: page one has two perforations, indicating the placement of a staple; unlike the other three pages, which have six perforations in the same area, indicating that they had previously been stapled, excluding the first page.

TABLE 2

WebCode	Methods/Techniques	Observations
	Magnification	The sixth line of page one shows a greater extension in the left margin; this extension is not evident on any of the other pages. 3- Another point of difference lies in the line spacing, with a greater distance observed between the paragraphs of Articles I, II, and III on page 1 and paragraphs IV, V, VI, and VII on page 2.
	Video Spectral Comparator (VSC)	A further difference is the misalignment of the page numbering on page one compared to the other three pages.
63MDN3	Ruler	The document subject to the examination is completed on one page of four white sheets of the same size 8.5 by 11 inches (US Letter) or 215.9 by 279.4 mm, and in the black and white laser printing process, with the same type of printer.
	Macroscopic Examination	The four sheets of the document are fastened using a metal clip in the upper right corner of the document, where on the first page only the holes created by the penetration of the existing metal clip are found, while on the other three sheets are found other holes created by another paper clip that has been removed.
	Oblique Light	Likewise, on the three sheets of the document, except for the first sheet, are found diagonal fold marks of the sheets near the upper right corner. On the backside of the last sheet are found indentation marks that correspond to the distance between the two holes on each side of the removed clip. These marks are at the same distance from the folding marks of the same page, as the holes of removed clip are.
	ESDA	On the front page of the last sheet, pressure marks (indentation marks) were found that correspond in the same configuration and same position in the page as the signature that has been written on the third sheet in name of Stanley Olson.
	Infrared Light	Three different writing implements are used to write the three signatures (different one for each signature) filled in the corresponding sections of the document, on the third and fourth sheets.
643D77	-Paper examination -Visual examination -Macroscopic /microscopic examination -Magnification	Visual/Macroscopic/Microscopic examination of the questioned document "Q1" did not reveal any differences in the edges, the dimensions (length, width), or color among its four pages. The text printed on the four pages of the questioned document "Q1" was produced by the same printing process (laser printing). There is only one staple hole on the first page, whereas there are two staple holes on the remaining pages (2, 3, and 4) of the questioned document "Q1". A crease is present in the upper left-hand corner of pages 2, 3 and 4 of the questioned document "Q1", while no crease was observed on the first page.
	ALS examination (UV examination/ Transmitted light)	Under UV light, no differences were observed between the four pages of the questioned document "Q1". Under transmitted light, no differences were observed between the four pages of the questioned document "Q1".
	Indented writing (ESDA2 and Oblique Light)	Indented writing corresponding to the signature of the testator Stanley Olson originally written on the third page of the questioned document "Q1" was revealed on the fourth page of the questioned document "Q1". Indented writing corresponding to the signatures of the two witnesses Andrea House and Chance Steele originally written on the fourth page of the questioned document "Q1", were revealed on both the second and third pages, while no Indented writing was revealed on the first page. This demonstrates that all three pages 2, 3, and 4 of the questioned document "Q1" were together when it was signed, whereas the first page was not present.

TABLE 2

WebCode	Methods/Techniques	Observations
69DNYZ	Microscopic Examination	The number of the holes on the corner on the first page of the document is different from the number of the holes on the corners on the second, third and fourth pages of the documents.
	Video Spectral Comparator (VSC)	The reaction of the first page of the document to various types of light sources is different from the second, third and fourth pages of the document.
6E4ZX3	Macroscopic/Microscopic Examination	Upon analyzing the questioned document (Q1), with respect to the stroke intersections, the following was observed: On page 3, in the testator's signature section, a direct stroke intersection between oil-based ink (black) and toner was identified. The baseline reference line was printed first, followed by the oil-based ink (black). On page 4, in the witness's signature section, a direct stroke intersection between oil-based ink (blue) and toner was identified. The baseline reference line was printed first, followed by the oil-based ink (blue). On page 4, in the testator's signature section, a direct stroke intersection between oil-based ink (black) and toner was identified. The baseline reference line was printed first, followed by the oil-based ink (black).
	Video Spectral Comparator (VSC)	During the analysis of the questioned document (Q1), using transmitted light, the following was observed: On page 1, in the upper left section, two holes caused by a staple were identified, compared to eight on pages 2, 3, and 4. On page 1, in the upper left section, this sheet was found to be unfolded, unlike pages 2, 3, and 4, which are folded. On page 1, in the lower right section of the page numbering, a misalignment was identified compared to the page numbering on pages 2, 3, and 4, where the overlapping is not misaligned.
	Video Spectral Comparator (VSC)	When performing the study with the spectral comparison video equipment, it was observed that the questioned document, in its completed pre-established sections, exhibits two spectral responses: one for Total Absorption and two for Luminescence. These sections are as follows: Inscription instrument: black ink pen for the signature affixed in the testator's section for Stanley Olson, page 3 of the questioned document. (Total Absorption). Inscription instrument: blue ink pen for the signature affixed in the witness's section for Andrea House, page 4 of the questioned document. (Luminescence). Inscription instrument: black ink pen for the signature affixed in the witness's section for Chance Steele, page 4 of the questioned document. (Luminescence).
6FYFAZ	ESDA	page 2 ,page 3 contains indented signatures of the signatures of witnesses found on page 4. Page 4 contains indented signature of the testator signature found on page 3 Page 1 has no indentations of the signatures.
	Magnification	Staple holes of page 2, page 3 and page 4 are not consistent with ones on page 1
	Flood light	Staple holes on page 2 ,page 3, and page 4 are not consistent with the ones on page 1. It appears as if page 1 was initially not present when page 2,page 333 and page were stapled together
6JV8FB	Macroscopic/Microscopic Examination	The staple holes are singular on Page 1 but are duplicated or enlarged (as if two holes have joined together) on pages 2, 3 and 4. Folds are seen in the top left hand corner of pages 2, 3 and 4 but are not present on page 1.
	Transmitted Light	Clear visualisation of the differences in size/shape/number of staple holes for each page.

TABLE 2

WebCode	Methods/Techniques	Observations
	Oblique Light	The texture of the front and back of each page was noted, and found to be visibly different for page 1 versus pages 2, 3 & 4. Impressions of the signature on page 3 are indented on page 4.
	Thickness	The paper thickness of page 1 was approximately 96 microns in comparison to a thickness of approximately 100 microns for each of the pages 2, 3 and 4.
	Visual Examination	The text of the 'Article I' paragraph on page 1 has been justified and the width of the righthand margin is visibly narrower than the rest of the text on page one and on the other pages. The last paragraph (on page 4) has also been justified. The other text on pages 1, 2, 3 and 4 is lefthand aligned and the page numbering aligns on all pages. The paragraph 'Residuary Estate' on page 1 is not listed as 'A' on page 1, whereas other headings on pages 2 and 3 are listed as 'A', 'B' and 'C'. The 'I' beginning the 'Article II' paragraph 'I direct that my just debts...' on page 1 is a different font style to the rest of the text on the document. The spacing between the paragraphs entitled 'Article I' and 'Article II' is larger than for the other paragraphs throughout the document.
	Ruler	The right hand margin for the paragraph 'Article I' on page 1 is approximately 18mm, whereas the righthand margins on the remainder of page 1 and on pages 2, 3 and 4 are between 28-29mm. The paragraph spacing between 'Article I' and 'Article II' is approximately 22mm, whereas the paragraph spacing between the other 'Article' paragraphs of the document is approximately 12mm.
	ESDA	None of the signatures on Q1 are indented on to page 1; the signature written on page 3 is indented on pages 2 and 4, and the two signatures on page 4 are indented on pages 2 and 3; this shows that these pages were stacked together and signed while resting on each other, probably while stapled and then folded back on themselves. A difference in the texture of the paper surface of page 1 in comparison to pages 2, 3 and 4 was observed.
	Video Spectral Comparator (VSC)	The 'look-through' and UV features of the paper of each page was observed and minor differences were noted on page 1 in comparison to pages 2, 3 and 4. The paper of page 1 showed different luminescence features to the paper of pages 2, 3 and 4. The printing features of the text on pages 1, 2, 3 and 4 were noted and no significant differences were found.
	Overlays	Scans of each page were overlaid to compare the font style, size and formatting between pages; these are similar with the following exceptions: a) the letter spacing of the paragraph 'Article I' on page 1 and the last paragraph on page 4 which is different because they have been justified b) the absence of 'A' before 'Residuary Estate' on page 1 c) the font style of the 'I' starting the paragraph entitled 'Article II' d) the paragraph spacing between 'Article I' and 'Article II' is larger than the spacing between the other 'Article' paragraphs throughout the document.
6N6KXA	Visual Examination	The document consists of four paper sheets bound with a staple. The corner of the first card is not bent. The corners of the other cards are bent. Now the cards were unstitched. Cards 2 - 4 have additional perforations from the staple - in total from two staples, and the first sheet from only one staple. The text on numbered pages 1-3 is aligned to the left margin. The text on numbered page 4 is aligned to both the left and right margins.

TABLE 2

WebCode	Methods/Techniques	Observations
	Ruler	The paper sheets have the same dimensions 21,6 × 27,9 cm. The left margin on every card is about 28 mm. The right margin is irregular, however, on the first page the text is extended to the right by a minimum of 18 mm from the right edge, and on the remaining printed pages by a minimum of 32 mm (for the numbered page 2) and 29 mm for the numbered pages 3 and 4.
	Analytical scale	The weight of the first card is significantly different from the weight of the other cards. Based on the weight measurements of the paper sheets, their grammage was determined. Page 1 – about 72 g/m ² ; Page 2 – about 75 g/m ² , Page 3 – about 75 g/m ² , Page 4 – 75 g/m ² .
	Thickness	Average thickness measurements indicate that the thickness of the first sheet is thinner than the other cards (1 - 0.099 mm, 2 - 0.105 mm, 3 - 0.106 mm, 4 - 0.104 mm).
	Microscopic Examination	The printed texts on all pages are printed by the laser-jet technique in monochromatic mode (black). The density of toner particles in printed characters and outside the printed characters is higher on the first numbered page than on the other pages. Signature on numbered page 3 it was probably drawn with a ballpoint pen with black ink. Signature in the first position "Witness Signature" was drawn with a pen with blue paste. Signature in the second position "Witness Signature" was drawn with a pen with black paste. Intensive blocking of the ballpoint pen pastes was observed at the intersection with the printed text of the numbered 4th page - the text was printed first and the signatures second.
	Video Spectral Comparator (VSC)	The printed texts on all pages are printed by the laser-jet technique in monochromatic mode (black). The density of toner particles in printed characters and outside the printed characters is higher on the first numbered page than on the other pages. The size of characters and the spacing between them, as well as the line spacing on all pages of the evidentiary document, are the same size. However, a discrepancy was found in the size and spacing of individual letters of the testator's children's surnames in line 5 of 1st page compared to the identical texts on page 2. On page 2, the repeated first and last names have the same size and spacing. The first card shows different UV, VIS-NIR luminescence and cards 2 - 4 shows the same. The numbering topography of the first page is different from the numbering topography of the numbered pages 2 – 4. Observation in oblique light shows indentations form "Testator Signature" (page 3) on numbered page 4.
	Magnetic Security Feature Imager	All printed texts were printed with magnetic black toner.
	ESDA	On numbered pages 2 and 3 were reveled indentations from first and second "Witness Signature" (page 4). On numbered page 4 were reveled indentations from "Testator Signature" (page 3). No traces of indented writing were found on the first sheet.
6P22B8	Video Spectral Comparator (VSC)	Various light sources (IR, UV, transmitted light, and oblique light, etc.) were used, but no optical differences in the paper or toner were observed across all four pages. On page 4, indented writing corresponding exactly to the handwritten entries on page 3 was observed using oblique light. This suggests that page 4 was positioned beneath page 3 at the time the signature was made on page 3.

TABLE 2

WebCode	Methods/Techniques	Observations
	Visual Examination	The document was fastened in the top left corner with a staple, but additional staple holes were observed on all pages except page 1 after removal of the staple. The smaller holes or marks located between the larger staple holes were observed and are consistent with indentation marks resulting from pressure associated with stapling. The number of these smaller holes or marks differed between page 1 and the other pages. This may suggest that an additional stapling process occurred on the pages other than page 1.
	Macroscopic/Microscopic Examination	All four pages were printed with black toner. The font style and line spacing of the printed text were similar across all four pages. The header and footer sizes, as well as the left margin sizes, were consistent across all four pages. However, only the right margin of the "Article 1" paragraph on page 1 differed from that of the other pages. In addition, the spacing between the "Article 1" paragraph and the subsequent paragraph on page 1 differed from the otherwise consistent spacing observed between article paragraphs across all pages, excluding "Article 1".
6TGBlP	Macroscopic/Microscopic Examination	- US Letter size The four-page document is a printed document with 1x original signature appearing on page 3 and 2x original signatures appearing on page 4. The four-page document was received stapled together in the top left corner; the staple was removed for examination purposes and additional staple holes were observed in pages 2 to 4. Nil misalignment of printed text observed. The printed entries on each page of the four-page letter were generated using a monochrome electrophotographic (toner) printing process.
	ESDA	No indentations of handwritten entries were detected on page 1 of the document. Indentations caused by the handwritten entries (signatures) appearing on pages 3 and 4 were detected on pages 2 to 4. Indentations caused by printing device feeder/rollers were detected on all pages of the document; differences were observed in the pattern of printer roller indentations on page 1 when compared to pages 2 to 4.
	Video Spectral Comparator (VSC)	Each of the pages in the four-page document were subjected to the following light sources and observations recorded. (1) UV: all pages are UV reactive with no significant differences observed. (2) Transmitted light: nil significant differences observed. (3) Infra-Red Reflectance: Page 1 reacted differently ('darker') than pages 2 to 4, which all looked similar ('lighter'). (4) Infra-Red Luminescence: Page 1 absorbs (appears darker) than pages 2 to 4, which all fluoresce (appear 'brighter').
6XFMGP	ESDA	Evidence of consistent roller marks were observed on the back of pages 1 to 4. Evidence of consistent roller marks were observed on the front of pages 2 to 4, not observed on page (p) 1. Indentations of the signature appearing on p3 appear on p4 and partially on p2, no indentations of signature observed on page 1. Indicates p4 and then p2 under p3 when signed. Indentations of the signatures appearing on p4 observed on p2 and lighter on p3, no indentations of signatures observed on page 1. Indicates p2 and then p3 under p4 when signed. No indications of p1 being under p3 or p4 when signed.

TABLE 2

WebCode	Methods/Techniques	Observations
	Macroscopic/Microscopic Examination	Item fastened top left corner with one staple through all 4 pages. Staple was removed revealing one set of staple holes on p1 and what appears to be a second set of staple holes on pages 2 to 4. Consistent with pages 2, 3 and 4 being stapled and then unstapled prior to being stapled with p1. Microscopic examination conducted of printing and signatures on each page. Each page displays raised black toner particles and electrostatic speckle, evidence of black laser print process. The signatures appearing on pages 3 and 4 are original pen ink signatures.
	Video Spectral Comparator (VSC)	Observed similarities in paper opacity with transmitted light, and UV fluorescence between all 4 pages. Observed similarities in IR Absorption/Reflectance of paper between all 4 pages. Observed similarities in IR Luminescence of paper for pages 2-4, and dissimilar reaction for p1 having a darker IR Luminescence reaction to pages 2-4. Similar spectral reaction between toner on each page.
	Overlays	Page margins were compared within and between the content on each page (where comparable). Left margin appears consistent on pages 1 to 4, right margin not clearly comparable however top line of Article I (p1) extends further to the right of the page than any other line on that page or other pages 2 to 4. Font in top line of Article I (p1) is larger than comparable font on the rest of the document. Font of 'I' in 3rd paragraph of page 1 (Article II) is different to font of rest of 'I's on page 1 and pages 2 to 4.
74WHXK	Oblique Light	No indentations were observed on item 1A. Indentations were observed on the front and back of items 1B, 1C, and 1D.
	ESDA	No indentations were observed on item 1A. Indentations were observed on the front and back of items 1B, 1C, and 1D.
	Video Spectral Comparator (VSC)	No significant observations were observed on items 1A and 1B. No fluorescence observed on items 1A and 1B. Inks dropped out on items 1C and 1D. Inks fluoresced on items 1C and 1D. Fluorescent dots/specks were observed on all items.
	Visual Examination	Images were captured depicting the staple holes on the top left corner of each item.
768KL4	Macroscopic/Microscopic Examination	A macroscopic examination of the document is carried out to verify its good state of preservation, consisting of four sheets of paper measuring 215 x 279 mm (8.5 x 11 in) and a staple in the upper left corner. In the area of junction of the four leaves, numbered 2, 3 and 4 have holes from a previous stapling, however number 1 lacks these previous holes. This irregularity is compatible with two staples made on the vestige; a first joint that is currently only visible on sheets number 2, 3 and 4 and a second joint with the replacement of preliminary sheet number 1 with current sheet number 1. A measurement is made on all four sheets with the micrometer at 0.105 mm. The macroscopic examination of printing processes is coincident on all four sheets.
	Video Spectral Comparator (VSC)	Analysis of the medium itself comparing the luminescent properties of the paper, inks used and printing systems with an examination using special lighting techniques in the visible spectrum and excitation filters. Measurement of staple holes is carried out and a comparison of superimposed images between the staple present and the holes present in the leaves.

TABLE 2

WebCode	Methods/Techniques	Observations
	ESDA	Following the study, we proceed to highlight possible indentations on the four sheets of paper in search of marks, marks or traces without ink and by direct pressure present in the vestige with the electrostatic detection equipment ESDA 2/A. The first page lacks the aforementioned marks that remain on the paper when writing over it while there is another sheet below, however in the second, the third and fourth pages reveal pressure marks with scriptural help from the signatures carried out on pages number 3 and 4 of the studied vestige. These marks show that the handwritten signatures present in the vestige were made with the rest of the pages below, and therefore, as page number 1 of these elements is missing, the replacement of the preliminary sheet number 1 by which the vestige is currently presented is established.
772BRH	Visual Examination Macroscopic/Microscopic Examination	The first page has only two staple holes, the remaining three pages (pages 2-4) have additional holes from another staple.
	Video Spectral Comparator (VSC) – UV, NIR	The paper on the first page has different optical properties (especially infrared luminescence) than the other pages of the document.
	Macroscopic/Microscopic Examination	The laser print on all four pages of the questioned document has the same features, both in terms of toner structure, magnetic properties and also character appearance and rasterization.
	Macroscopic/Microscopic Examination	The sixth line of text on the first page ("The names of my children are Cody Olson, Jasmine Olson, Kyle Olson, Jenna Olson, and Bradley Olson. All") differs in appearance from the rest of the text on that page and the subsequent three pages. The characters in this line use a slightly larger font size, and the line itself is longer, extending beyond the right margin of the document.
	Video Spectral Comparator (VSC) – oblique light, ESDA	There are some indentations on the second and third pages left by signatures from the fourth page (the most probable version is that the document was stapled, then pages 1-3 were flipped under the last sheet, leaving the fourth page on top to be signed). The first page of the questioned document has no such indentations. Page four of the document contains indented impression originating from the signature of the testator from the page three.
7V3D74	Visual Examination	Creased paper on all but the first page, extra staple holes on every page except the first.
	ESDA	Appropriate indentations of signatures were on all pages except the first page. The first page had no indentations.
7V7WU8	Macroscopic/Microscopic Examination	Digital Microscope 1. Hole marks were found around the staple on the back of Item Q1. 2. P1 through P4 are all toner printed.
	Video Spectral Comparator (VSC)	1. side lighting: (1) P2 through P4 have creases in the upper left corner, but P1 doesn't. (2) P4 has a latent impression. 2. transmitted lighting: P2 through P4 have additional hole marks around the staple, but P1 doesn't. 3. UV lighting: No significant difference. 4. IR reflection: No significant difference.

TABLE 2

WebCode	Methods/Techniques	Observations
	ESDA	1. No latent impressions were found on P1. 2. P2 shows three latent impressions indicating signatures. From top to bottom in order are Andrea House, Chance Steele, Stanley Olson. 3. P3 shows two latent impressions indicating signatures. From top to bottom in order are Andrea House, Chance Steele. 4. P4 shows one latent impressions indicating a signature, Stanley Olson. 5. Through overlapping comparison, the latent impressions roughly overlap with the original signatures on P3 and P4.
	Ruler	Scale The right margin and footer spacing of P2 through P4 is set to the same distance, but it differs from P1.
7ZDMYX	ESDA	During ESDA analysis, it was discovered that pages 2,3 and 4 of 4 contain indented writing (signatures). Page 1 of 4 did not show any signs of indented writing during ESDA analysis.
	Projectina Nirvus	Page 1 of 4 contains only two staple holes. Pages 2, 3 and 4 of 4 contain a variety of number of staple holes. Page 1 of 4 is not folded in the top left corner as opposed to the rest of the pages. The font for letter "I" on page 1 of 4 is different from the font on pages 2 and 3 of 4
	Luminescence light	When Luminescence light is used on all pages, page 1 of 4 has a different colour.
87JGTU	ESDA	ESDA was used to decipher indented writing and staple holes from the document. In page 2 of the document indented signatures were deciphered. The signatures recovered in page 2 were not in page 1 of the document which indicates alterations by means of insertion. In page 4 of the document, a signature was deciphered. Staple holes were deciphered in all the pages, however in pages 2 to 4 there is more than one set of staple holes and they are in the same position but in page 1 there is only one set of staple holes.
	Video Spectral Comparator (VSC)	In the video spectral comparator, the flood lights and side lights left and right were used. The side lights revealed the indented signature in page 4. The document was magnified to show the multiple staple holes in page 2 to page 4. I observed that page 1 has only 1 set of staple holes, which makes it different from the other pages in the document.
	Magnification	The equipment that was used was magnified to reveal the different number and position of the different staple holes. This technique also revealed the indentations that were recovered in page 4.
88RVXE	Visual Examination	Using the unaided eye, oblique light and magnification with the stereo microscope, I examined Ex. 1-1 through 1-4: • All are approx. 8 ½ by 11" • All are printed using black toner and in portrait mode. • They are stapled together at the top, left-hand corner. The last page (Ex. 1-4) has a second set of staple holes above the staple visible from the back side of the paper. That same corner had been previously folded over. Page 1 seems to have one fold while the others appear to have two. • The color of the first page (Ex. 1-1) appears slightly different and appears more opaque.

TABLE 2

WebCode	Methods/Techniques	Observations
	Indented Writing	Using the Crime-lite with side lighting, I examined the front and back of the exhibits for the presence of indented writing. Indented writing was observed on the front of Ex. 1-4. It appears to be from the execution of the visible signature on Ex. 1-3, which is the page preceding it in the packet. No other indented writing was observed. A vertical indentation mark was also noted on the back side, left of center on all the exhibits. They align. The front and back of all the exhibits were processed using the ESDA 2 instrument for the presence of indented writing. The functionality of the ESDA was verified using a verification test strip each time an item of evidence was processed. Ex. 1-2 has indentations of the signatures on Ex. 1-4, Ex. 1-3 has indentations of the signatures on Ex. 1-4 and Ex. 1-4 has indentations of the signature on Ex. 1-3. Ex. 1-1 has indentations on the right edge that do not seem to match up with any of the writing. No indentations of the visible signatures on Ex. 1-3 or 1-4 were developed on Ex. 1-1.
	Ultraviolet Light	Using the UV light box, I fanned the four pages to compare the optical properties. No difference was observed. They all appear visually similar under short (254nm) and long wave (365nm) UV.
	Transmitted Light	No watermarks were observed on any using transmitted light. However, the difference in opaqueness observed between Ex. 1-1 and the other pages was seen. Using the VSC 9000 with transmitted light, I saved several images showing the misalignment of the margins and footer of page 1 vs the other pages.
	Video Spectral Comparator (VSC)	Using the spot fluorescence filter, Ex. 1-1 appears optically different than pages 2-4. It appears darker.
	Overlays	Using Adobe Photoshop and layers, I overlaid the images of the ESDA lifts bearing indentations and their source documents. During my examination with a grid, I noticed a misalignment of the page 1 right margin and page number in the footer. The fonts on page 1 are similar in design and size as that on the other pages. This was demonstrated by a comparison and overlay of common words, but the right margin and placement of the page number do not align. The right margin of Ex. 1-1, specifically line 6 ending with the words "Olsen. All", juts further to the right than any of the other text on the other pages. This may be where the alteration is located. The page number in the footer also appears in a slightly different location as compared to the other page numbers.
	Micrometer	Using a micrometer, I measured the thickness of each exhibit at the bottom left-hand corner and top right-hand corner. They all measured approximately the same thickness.
	Magnification	Examined the signatures under magnification and confirmed they are original. No evidence of unnaturalness or tracing was observed.
8BTUBT	ESDA	The document marked as Q1a (page 1) has no indentations. The document marked as Q1b (page 2) has indentations of the signature that appears on the document marked as Q1d. The document marked as Q1c (page 3) has indications of the signature that appear on the document marked as Q1d. The document marked as Q1d (page 4) has indentations of the signature that is on document marked Q1c.
	Video Spectral Comparator (VSC)	Magnification and flood light for examination of staple holes. The document marked as Q1a (page 1) has two staple holes, whereas documents marked as Q1b to Q1d (page 2 to page 4) has more than two holes.

TABLE 2

WebCode	Methods/Techniques	Observations
8ET67T	ESDA	1. "Page 2" and "Page 3" contained indented signatures of the signatures of Witnesses found on "Page 4". This indicates that "Page 4" was placed on top of "Page 2" and "Page 3" when the Witnesses were signing on "Page 4". 2. "Page 4" contains an indented signature of the signature of Testator found on "Page 3". This indicates that "Page 3" was placed on top of "Page 4" when the Testator was signing on "Page 3". 3. "Page 1" contained no indented signatures. This indicates that "Page 1" was not present when the Witnesses placed "Page 4" on top of "Page 2" and "Page 3" when signing.
	Video Spectral Comparator (VSC)	1. Some of the staple-holes identified on "Page 2", "Page 3" and "Page 4" are not present on "Page 1". This further confirms that "Page 1" was initially not present when other pages were stapled together.
8F6KY9	Video Spectral Comparator (VSC)	The fluorescence of Page 1 of the questioned will is different from the remaining pages.
	Transmitted Light	The staple holes at the upper left corner of Page 1 of the questioned will are inconsistent with those at the remaining pages.
	Oblique Light	There is no crease at the upper left corner of Page 1 of the questioned will, while creases are present at the upper left corner of the remaining pages.
8FA6LB	Visual Examination	Page 1 showed staple holes matching the removed staple. Pages 2 to 4 show staple holes matching the removed staple, as well as extra staple-like holes.
	Microscopic Examination	Page 1 showed staple holes matching the removed staple. Pages 2 to 4 show staple holes matching the removed staple, as well as extra staple-like holes.
	Video Spectral Comparator (VSC)	Pages 2 to 4 show staple holes matching the removed staple, as well as extra staple-like holes and page 1 have only holes matching removed staple; supported by multiple photos under various lights.
	ESDA	Although there are no indentations to show that page 1 was included in the signing procedure, there is also no indication that it was excluded from the process. Indentations found on pages 2,3 and 4. The decipherment of the correct sequence of pages signing may be complex, but in this case will only determine possible position of pages 2 to 4 towards each other during the signing process.
8FNN9U	ESDA	No indentations found on page one. Indentations of the signatures found on pages 2-4
	Video Spectral Comparator (VSC)	multiple staple holes and folding crease visible on left corner of pages 2-4. No crease and only one staple hole found on page 1. The right margin in the Identification of Family section is longer than the right margin on the rest of the document and the first sentence beginning with "The names of my..." is written in a larger font than the rest of the page.

TABLE 2

WebCode	Methods/Techniques	Observations
8G2DFC	Macroscopic/Microscopic Examination	Macroscopic and microscopic examinations reveal a mismatch in binding history. It is shown that page 1 has only a single staple hole on each side, indicating it has been possibly stapled only once. In contrast, pages 2 through 4 showed multiple staple holes on one side. This discrepancy suggests that the subsequent pages may have been previously bound to a different document or that the first page may have been replaced after the original binding was removed. On page 1, the vertical alignment of the first line from 'Article I' is inconsistent with the margins maintained on pages 2 through 4 suggesting that there is a lack of uniform formatting across the entire document set. In addition, there is a noticeable inconsistency in line spacing between 'Article I' - 'Article II' and 'Article II' - 'Article III'. This discrepancy indicates that page 1 may have been adulterated from the original document.
	Video Spectral Comparator (VSC)	The submitted documents were examined using spot-mode fluorescence. Page 1 exhibited distinct luminescent characteristics that were inconsistent with the optical properties observed on pages 2 through 4. This variation suggests that page 1 may have been sourced from a different paper stock.
8J9FJW	ESDA	There were no indented signatures on page 1 of 4 while there were indented signatures on page 2 of 4, page 3 of 4 and page 4 of 4.
	Video Spectral Comparator (VSC)	Used flood light and magnification to observe the staple holes pattern. It shows that page 1 of 4 illustrate different holes pattern compared to page 2 of 4, page 3 of 4 and page 4 of 4 while holes pattern on page 2 of 4, page 3 of 4 and page 4 of 4 correspond.
8TUGZ7	Microscopic Examination	The staple holes indicate that the document has been re-stapled. Page 1 and pages 2~4 were not printed on the same laser printer.
	Oblique Light	There is no folding mark along the staple line on page 1, but pages 2 through 4 have folding marks where they are stapled.
	Video Spectral Comparator (VSC)	The page number on page 1 is misaligned with those on the other three pages.
	Micrometer	The right margin on page 1 is inconsistent with that of the other three pages.
8UQZ28	Video Spectral Comparator (VSC)	
	Macroscopic Examination	
8X7RQE	ESDA	examination of indented writing on page 4/4 trace of signature on page 4/3 are visible
	Indented Writing	on page 4/4 trace of signature on page 4/3 are visible (unpainted writing gooves)
	Infrared Light	examination of possible alterations
	Macroscopic/Microscopic Examination	examination of printing techniques examination of the microscopical properties of printed elements
	Magnification	examination of printing techniques
	Oblique Light	non-destructive examinations of papers examination of indented writing: on page 4/4 traces of the signature on page 4/3 are visible in oblique light (unpainted writing grooves)

TABLE 2

WebCode	Methods/Techniques	Observations
	Ruler	paper and position of the printed parts in relation to each other examination of the variety of hole patterns(size, shape, placement in relation to page edges and to each other)
	Thickness	non-destructive examinations of papers
	Transmitted Light	non-destructive examinations of papers
	Video Spectral Comparator (VSC)	non-destructive examinations of papers examination of printing techniques examination of the dye(s) used for printing deletion, check of content changes
	Visual Examination	tests non-destructive examinations of papers examinations of the staple holes locations
	FTIR	based of infrared macroscopic analysis, no distinguishable differents were detected between the toner materials of the printed text portions on pages 1-4 based in the infrared spectroscopic examinations, the paper materials of pages 1–4 are indistinguishable from one another
	Ultraviolet Light	examination of the ultraviolet (UV) properties of paper substrates - we were not found significant differences between the papers quality examination of possible alterations
9KY2N8	Video Spectral Comparator (VSC)	1. Under spot lighting, Page 1 exhibited different characteristics from Page 2, Page 3 and Page 4. 2. The staple marks on the Page 1 is different from the staple marks on the Page 2, Page 3 and Page 4. Page 2, Page 3 and Page 4 showed similar staple pattern. 3. Absence of folding mark on the Page 1 while presence of similar folding mark on the Page 2, Page 3 and Page 4. 4. The signatures on the Page 3 and Page 4 were handwritten. 5. The printed entries on page 1, page 2, page 3 and page 4 showed similar size and type of font. 6. The printed entries on page 1, page 2, page 3 and page 4 showed similar images as the images of electrophotographic printing process.
	ESDA	1. No indented writing was found on the Page 1. 2. Indented writing of Andrea House's signature, Chance Steele's signature and Stanley Olsen's signature were deciphered on the Page 2. 3. Indented writing of Andrea House's signature and Chance Steele's signature were deciphered on the Page 3. 4. Indented writing of Stanley Olsen's signature was deciphered on the Page 4. 5. The deciphered indented writing (signatures) were consistent to the Andrea House's signature and Chance Steele's signature on page 4 and Chance Steele's signature on page 3.
9QLRB3	No Methods or Observations were reported by this participant.	
9T6ZYU	ESDA	Page 3 contains one (01) signature. The indented impression of this signature was detected on pages 2 and 4. No corresponding indented impression of this signature was detected on page 1. Page 4 contains two (02) signatures. The indented impressions of these signatures were only detected on pages 2 and 3. The examination of the questioned "Last Will and Testament" document revealed material inconsistencies between Page 1 and Pages 2–4.

TABLE 2

WebCode	Methods/Techniques	Observations
	Video Spectral Comparator (VSC)	It was observed that page 1 is not vertically aligned with page numbering position, page 2 to 4 demonstrate consistent alignment relative to their respective page numbering. "Q1" displays two (02) staple holes, "Q2" displays four (04) staple holes, "Q3" displays six (06) and "Q4" displays eight (08) staple holes. "Q1" to "Q4" exhibited similar reactions under Ultraviolet light, indicating no observable differences in paper composition.
A3XEYT	ESDA	NO INDENTATION WAS OBSERVED ON PAGE 1 OF 4 WHILE THERE WERE INDENTATION OBSERVED ON PAGE 2 OF 4, PAGE 3 OF 4 AND PAGE 4 OF 4.
	Video Spectral Comparator (VSC)	SINGLE PAIR OF STAPLE HOLES WAS OBSERVED ON PAGE 1 OF 4 WHILE THERE WERE MULTIPLE STAPLE HOLES ON PAGE 2 OF 4, PAGE 3 OF 4 AND PAGE 4 OF 4.
A89LEQ	Visual Examination	The visual examination of the document reveals that the first page bears only one staple perforating the same sheet of paper and keeping the whole bundle of 4 pages together, no other signs of perforation are visible on the first page. By contrast pages 2, 3, and 4 show, in all cases, signs of another pair of previous holes (holes that are in addition to those produced from the current stapling starting at page one), likely resulting from a previous staple that was at a certain time removed from the original bundle. As a consequence, the first page of the dossier results having been added to pages 2, 3, and 4 at a later date, replacing the previous page 1 which was part of the original bundle.
	Indented Writing	From the measurement of writing/paragraph indents it turns out that the 6th printed line of page 1 is extended up to a distance of only 0.71 inches from the sheet right margin, whereas in the pages 2, 3 and 4 all lines terminate on the right side at a distance which is always inferior to 1.14 inches from the page right margin. These indents differences (between page 1 on the one side and pages 2, 3, 4 on the other side) are evidence of a different word processing layout for the file that gave birth to page 1 compared to the margin layout configured for the computer file that produced pages 2, 3 and 4.
	Transmitted Light	From the transmitted light examination of the four sheets that make up the dossier, the first page resulted having a different paper texture, as well as a different color and a different light permeability than the texture, color and light permeability possessed by pages 2, 3, 4; these findings indicate that the first page has been printed on a different type of paper than the paper used to print the other three pages.
AE4RTY	Microscopic Examination	Print process determination on Item 1 (Q1): All pages prepared using black toner with original inked signatures on pages 3 and 4
	Oblique Light	Oblique light used to check for indented writing on pages 1 through 4 of Item 1 (Q1): Item 1 does not contain the impression of the signatures on pages 3 and 4, as would be expected had the document been executed during a single signing ceremony in the manner described in the scenario.
	Micrometer	Micrometer used to measure thickness of pages 1 through 4 on Item 1 (Q1): .10mm on all 4 pages.
	ESDA	Conducted on pages 1 through 4 of Item 1 (Q1): Item 1 does not contain the impression of the signatures on pages 3 and 4, as would be expected had the document been executed during a single signing ceremony in the manner described in the scenario.

TABLE 2

WebCode	Methods/Techniques	Observations
	Video Spectral Comparator (VSC)	Used to detect any light reflectance/absorption differences between pages 1 through 4 on Item 1 (Q1) using various wavelengths, including UV: none detected.
	Visual Examination	Staple hole discrepancy: 1 set on page 1 of Item 1 (Q1) and 2 sets on pages 2 through 4. Font discrepancies observed: On page 1 under Article II, the "I" in "I direct" is different than the I's in the remaining paragraphs on Item 1 (Q1). Right margin discrepancies observed on page 1.
	Transmitted Light	Transmitted light used to check for watermarks on Item 1 (Q1): no watermarks observed.
	Magnetic toner detector	All 4 pages on Item 1 (Q1) were determined to be magnetic.
ANAE4K	Visual Examination	Layout: Margins and page numbering are consistent though. Page 1 shows a slight misalignment (<1 mm) compared to Pages 2–4. Signatures: Signatures on Pages 3 and 4 are original ink entries, not reproductions. Physical Alterations: Pages 2–4 exhibit top-left corner folds and two sets of staple holes; Page 1 lacks the fold and contains only one set of staple holes. Deduction: This indicates the original document was stapled and folded, then unfastened to replace the original Page 1 with the current version.
	ESDA	Page 3 Signature: Indentations appear on Pages 2 and 4, but not Page 1. Page 4 Signatures: Indentations appear on Pages 2 and 3, but not Page 1. Deduction: Pages 2, 3, and 4 were superimposed during signing. Page 1 was absent during the signing ceremony.
	Microscopic Examination	Microscopy: Toner morphology is consistent across all pages.
	Video Spectral Comparator (VSC)	Optical (VSC): All pages utilize similar paper stock.
	Micrometer	Metrical Measurements: Weight (72–73 g/m ²), thickness (96–99 microns), and dimensions (length and width) are uniform, confirming the use of the same paper type.
	Magnetic examination	Magnetic Examination: Consistent magnetic flux distribution and inhomogeneities suggest all pages were printed in portrait orientation using the same printer.
ANPVYD	Visual Examination	Staple removed from document Q-1 to facilitate examination. Two sets of staple holes noted on pages 2, 3, and 4. No second set of staple holes present on page 1. Color of page 1 is slightly brighter than pages 2, 3, and 4.
	Oblique Light	Impressions of testator signature on page 3 are present on front of page 4. No other impressions noted on document.
	Video Spectral Comparator (VSC)	Imaged staple holes under normal lighting and transmitted lighting. Two sets of staple holes seen on pages 2, 3, and 4, but not on page 1. UV light - page 1 is slightly lighter blue under UV 254nm, but similarly colored under 365nm UV to all other pages. Nothing else noted under spot lighting and transmitted lighting.
	ESDA	Positive control with positive results. Two (2) ESDA lifts retained in DEU with positive control and resultant lift. One (1) lift taken from front of page 1 and one (1) lift taken from front of page 2. Page 1 shows no impressions of signatures on pages 3 and 4. Lift taken of front of page 1. Page 2 shows impressions of signatures on pages 3 and 4. Lift taken of front of page 2. Page 3 shows impressions of signatures on page 4. Lift not taken of page 3 at this time.

TABLE 2

WebCode	Methods/Techniques	Observations
ATJRLJ	Visual Examination	A macroscopic physical and organoleptic examination has been performed on both sides of the document, ruling out mechanical or chemical alterations -such as erasures, solvent washing, or obliterations- to the paper substrate. A singular printing system using monochrome laser technology has been identified. The typographic design remains consistent, employing a Century family serif typeface (compatible with Century Schoolbook); it utilizes a 12-point body for the main text, while headings and titles follow a proportional scale estimated between 14 and 16 points.
	Video Spectral Comparator (VSC)	The results of the preliminary analysis phase are confirmed (the absence of marks on page 1 affects the document's consistency, indicating that it has been tampered with separately). Furthermore, examination using a VSC under ultraviolet (UV) light reveals a substrate with a uniform satin finish.
	ESDA	ESDA (Electrostatic Detection Analysis) results reveal latent indentations on pages 2 and 3, corresponding to the handwritten signatures executed on pages 3 and 4, respectively. Conversely, no such indented impressions were detected on page 1.
AXZWKE	Visual Examination	Page 1 has only one set of staple holes. This is in contrast to pages 2 to 4, which all have two sets of staple holes. Furthermore, page 1 has no crease / paper fold in the top left-hand corner. This fold can be seen on pages 2 and 3.
	Ultraviolet Light	Difference in reaction under UV light detectable between page 1 and pages 2 to 4.
	Thickness	Difference in paper thickness detectable between page 1 and pages 2 to 4.
	Overlays	Different positioning of the entry "Page 1 of 4" compared with the corresponding entries on pages 2 to 4.
	Microscopic Examination	Comparison of toner deposits between individual pages. No discernible differences
B2WZP7	Indented Writing	Using side lighting, numerous indentations were illuminated. Due to the lack of knowledge of chain of evidence, it is not determinable whether or not these indentations were contemporaneous, or after the fact, in handling and shipping.
	Macroscopic/Microscopic Examination	The signatures are both authentic wet ink. No ink dating was performed. This would require this examiner to send to an off site lab.
	Visual Examination	Upon examining each page of the questioned document, page one has only 3 visible staple holes with two semi perforations or indents, page 2 has 5 staple holes with 2 semi perforations, page 3 has 6 perforations, page 4 has 7 staple holes. Accordingly, the first page is suspect as having been added at a later date.
BAMLTJ	ESDA	An ESDA2 was used to process each page for indented writing. No indented writing was developed on page 1. All 3 signatures were indented onto page 2. The page 4 signatures were indented onto page 3. The page 3 signature was indented onto page 4.
	Video Spectral Comparator (VSC)	Using UV light, no differences were noticed amongst the 4 pages of Q1
	Transmitted Light	Transmitted light (using the VSC 6000/HS) was used to examine the staple holes on each page of Q1. One set of staple holes was observed on page 1. Two sets of staple holes were observed on pages 2, 3 and 4 and were consistent with each other.

TABLE 2

WebCode	Methods/Techniques	Observations
	Overlays	The left margin of the typed text on page 1 appeared to be out of alignment with the other pages of Q1.
	Ruler	The font size of the typed text was consistent throughout Q1.
BB26GM	Visual Examination	Observed Exhibit Q1 contained four (4) pieces of white paper, labeled Q1-1 through Q1-4 for identification purposes, stapled together in the upper left corner. The pages measured approximately 8.5"x11". The pages contained the "Last Will and Testament of STANLEY OLSON". There was no printing on the backs of each page. Pages Q1-3 and Q1-4 contained original writing in the form of signatures. The front page of Q1 had no visible extra staple holes. The last page of Q1 had one visible extra staple hole.
	Ruler	All four pages of Exhibit Q1 measured approximately 8.5"x11".
	Magnification	Forensic examinations were conducted on Exhibit Q1 utilizing a stereomicroscope. The front page of Q1 had no visible extra staple holes. The last page of Q1 had one visible extra staple hole.
	Microscopic Examination	Forensic examinations were conducted on Exhibit Q1 utilizing a stereomicroscope. Exhibit Q1 was printed in black-only toner on all four pages. There was no printing on the backs of each page.
	Video Spectral Comparator (VSC)	Forensic and comparative examinations were conducted on Exhibits Q1-1 through Q1-4 utilizing a video spectral comparator. In a microscopic examination, Q1-1 had one set of two staple holes, suggesting no additional staples. Q1-2, Q1-3, and Q1-4 had three staple holes. The right-most staple holes on Exhibits Q1-2, Q1-3, and Q1-4 are larger than the right-most staple hole on Exhibit Q1-1. Exhibits Q1-2, Q1-3, and Q1-4 have two staple holes on the left, suggesting and least one previous staple was used on these pages. In an examination utilizing transmitted light, Q1-1 had one set of two staple holes, suggesting no additional staples. Q1-2, Q1-3, and Q1-4 had three staple holes. The right-most staple holes on Exhibits Q1-2, Q1-3, and Q1-4 are larger than the right-most staple hole on Exhibit Q1-1. Exhibits Q1-2, Q1-3, and Q1-4 have two staple holes on the left, suggesting and least one previous staple was used on these pages. Exhibits Q1-1 through Q1-4 paper contained no observable differences under transmitted visible light. No watermarks were observed on Exhibits Q1-1 through Q1-4. In an examination utilizing infrared light, Exhibits Q1-1 through Q1-4 paper had no observable differences under infrared reflective light. Exhibit Q1-1 paper appeared different than Exhibits Q1-2 through Q1-4 under infrared luminescent light. Exhibit Q1-1 through Q1-4 toner had no observable differences under infrared reflective light or infrared luminescent light. In an examination utilizing ultraviolet (365nm) light, Exhibits Q1-1 through Q1-4 paper had no observable differences under ultraviolet light (365nm). Exhibit Q1-1 through Q1-4 toner had no observable differences under ultraviolet light (365nm). In an indented writing examination utilizing visible oblique light, there were no observable differences between the surface textures of Exhibits Q1-1 through Q1-4. When using side lighting, Exhibit Q1-4 contained observable indented writing that appears to be a signature from the previous page, Exhibit Q1-3. In an examination utilizing visible light, Exhibits Q1-1 through Q1-4 paper contained no observable differences under visible light. Exhibits Q1-1 through Q1-4 toner contained no observable differences under visible light.

TABLE 2

WebCode	Methods/Techniques	Observations
	Microscopic Examination	Forensic and comparative examinations were conducted on Exhibits Q1-1 through Q1-4 utilizing a video spectral comparator. Q1-1 had one set of two staple holes, suggesting no additional staples. Q1-2, Q1-3, and Q1-4 had three staple holes. The right-most staple holes on Exhibits Q1-2, Q1-3, and Q1-4 are larger than the right-most staple hole on Exhibit Q1-1. Exhibits Q1-2, Q1-3, and Q1-4 have two staple holes on the left, suggesting and least one previous staple was used on these pages.
	Transmitted Light	Forensic and comparative examinations were conducted on Exhibits Q1-1 through Q1-4 utilizing a video spectral comparator. Q1-1 had one set of two staple holes, suggesting no additional staples. Q1-2, Q1-3, and Q1-4 had three staple holes. The right-most staple holes on Exhibits Q1-2, Q1-3, and Q1-4 are larger than the right-most staple hole on Exhibit Q1-1. Exhibits Q1-2, Q1-3, and Q1-4 have two staple holes on the left, suggesting and least one previous staple was used on these pages. Exhibits Q1-1 through Q1-4 paper contained no observable differences under transmitted visible light. No watermarks were observed on Exhibits Q1-1 through Q1-4.
	Infrared Light	Forensic and comparative examinations were conducted on Exhibits Q1-1 through Q1-4 utilizing a video spectral comparator. Exhibits Q1-1 through Q1-4 paper had no observable differences under infrared reflective light. Exhibit Q1-1 paper appeared different than Exhibits Q1-2 through Q1-4 under infrared luminescent light. Exhibit Q1-1 through Q1-4 toner had no observable differences under infrared reflective light or infrared luminescent light.
	Ultraviolet Light	Forensic and comparative examinations were conducted on Exhibits Q1-1 through Q1-4 utilizing a video spectral comparator. Exhibits Q1-1 through Q1-4 paper had no observable differences under ultraviolet light (365nm). Exhibit Q1-1 through Q1-4 toner had no observable differences under ultraviolet light (365nm).
	Indented Writing	Forensic examinations were conducted on Exhibits Q1-1 through Q1-4 utilizing a video spectral comparator. Exhibit Q1-4 contained observable indented writing that appears to be a signature from the previous page, Exhibit Q1-3. Exhibits Q1-1 through Q1-3 did not contain any observable indented writing.
	Oblique Light	Forensic examinations were conducted on Exhibits Q1-1 through Q1-4 utilizing a video spectral comparator. When using side lighting, there were no observable differences between the surface textures of Exhibits Q1-1 through Q1-4. When using side lighting, Exhibit Q1-4 contained observable indented writing that appears to be a signature from the previous page, Exhibit Q1-3.

TABLE 2

WebCode	Methods/Techniques	Observations
	Thin-Layer Chromatography	Chemical and comparative examinations utilizing Thin-Layer Chromatography (TLC) and a video spectral comparator were conducted on representative samples of the toner on Exhibits Q1-1 through Q1-4. The toner formulation on Exhibits Q1-1 through Q1-4 were determined to be chemically indistinguishable. Therefore, Exhibits Q1-1 through Q1-4 toner cannot be excluded as sharing a common source. Chemical and comparative examinations utilizing Thin-Layer Chromatography (TLC) and a video spectral comparator were conducted on representative samples of the paper of Exhibits Q1-1 through Q1-4. At this level of analysis, the paper of Exhibit Q1-1 was determined to be chemically distinguishable from the paper of Exhibits Q1-2 through Q1-4. The paper of Exhibits Q1-2 through Q1-4 were determined to be chemically indistinguishable. Therefore, Exhibits Q1-2 through Q1-4 paper cannot be excluded from sharing a common source, and Exhibit Q1-1 paper can be excluded from sharing a common source with Exhibits Q1-2 through Q1-4 paper.
	Video Spectral Comparator (VSC)	Forensic examinations were conducted on the resulting TLC plate utilizing a video spectral comparator. Under visible light, there were no observable differences between samples taken from the toner of Exhibits Q1-1 through Q1-4 on the TLC plate. A black spot at the origin was observed. Under visible light, there were no observable differences between samples taken from the paper of Exhibits Q1-1 through Q1-4 on the TLC plate. No visible components were observed.
	Ultraviolet Light	Forensic examinations were conducted on the resulting TLC plate utilizing a video spectral comparator. Under ultraviolet (365nm) light, there were no observable differences between samples taken from the toner of Exhibits Q1-1 through Q1-4 on the TLC plate. A UV dark spot was observed at the origin. Under ultraviolet (365nm) light, there were no observable differences between samples taken from the paper of Exhibits Q1-1 through Q1-4 on the TLC plate. The following was observed for the paper blank samples from each exhibit: UV fluorescent spot at the origin, UV fluorescent streak from the origin up to $R_f \sim 0.35$, and UV fluorescent bands at $R_f \sim 0.65$ and $R_f \sim 0.7$.
	Infrared Light	Forensic examinations were conducted on the resulting TLC plate utilizing a video spectral comparator. Under infrared reflective light (850nm), there were no observable differences between samples taken from the toner of Exhibits Q1-1 through Q1-4 on the TLC plate. A black spot at the origin was observed. Under infrared reflective light (850nm), there were no observable differences between samples taken from the paper of Exhibits Q1-1 through Q1-4 on the TLC plate. No visible components were observed. Under infrared luminescent (IRL) light, there were no observable differences between samples taken from the toner of Exhibits Q1-1 through Q1-4 on the TLC plate. Under infrared luminescent light, the samples taken from the paper of Exhibits Q1-1 exhibited no IRL components. The samples taken from Exhibits Q1-2 through Q1-4 exhibited an IR luminescent band at $R_f \sim 0.65$. Therefore, samples taken from the paper of Exhibit Q1-1 were chemically distinguishable from samples taken from the paper of Exhibits Q1-2 through Q1-4 in a TLC examination.

TABLE 2

WebCode	Methods/Techniques	Observations
	Thin-Layer Chromatography	Forensic examinations were conducted on the resulting TLC plate utilizing a video spectral comparator. Under visible light, there were no observable differences between samples taken from the toner of Exhibits Q1-1 through Q1-4 on the TLC plate. A black spot at the origin was observed. Under visible light, there were no observable differences between samples taken from the paper of Exhibits Q1-1 through Q1-4 on the TLC plate. No visible components were observed. Under ultraviolet (365nm) light, there were no observable differences between samples taken from the toner of Exhibits Q1-1 through Q1-4 on the TLC plate. A UV dark spot was observed at the origin. Under ultraviolet (365nm) light, there were no observable differences between samples taken from the paper of Exhibits Q1-1 through Q1-4 on the TLC plate. The following was observed for the paper blank samples from each exhibit: UV fluorescent spot at the origin, UV fluorescent streak from the origin up to $R_f \sim 0.35$, and UV fluorescent bands at $R_f \sim 0.65$ and $R_f \sim 0.7$. Under infrared reflective light (850nm), there were no observable differences between samples taken from the toner of Exhibits Q1-1 through Q1-4 on the TLC plate. A black spot at the origin was observed. Under infrared reflective light (850nm), there were no observable differences between samples taken from the paper of Exhibits Q1-1 through Q1-4 on the TLC plate. No visible components were observed. Under infrared luminescent (IRL) light, there were no observable differences between samples taken from the toner of Exhibits Q1-1 through Q1-4 on the TLC plate. Under infrared luminescent light, the samples taken from the paper of Exhibits Q1-1 exhibited no IRL components. The samples taken from Exhibits Q1-2 through Q1-4 exhibited an IR luminescent band at $R_f \sim 0.65$. Therefore, samples taken from the paper of Exhibit Q1-1 were chemically distinguishable from samples taken from the paper of Exhibits Q1-2 through Q1-4 in a TLC examination.
BFTEPZ	Macroscopic/Microscopic Examination	The four pages of the document reveal that they have the same surface microtexture; The text is the result of xerographic (toner) printing; Microscopic examination of the signatures showed that were established directly on the support
	Ultraviolet Light	Examination under ultraviolet light of the four pages revealed no traces of Chemical additives and they exhibit the same fluorescence.
	Transmitted Light	The examination under transmitted light of the four pages revealed that they exhibit the same opacity.
BK9PZH	Video Spectral Comparator (VSC)	It is observed that the line exceeds the margin of the document, presenting a misalignment with respect to the text, indicative of a possible later addition.
	ESDA	Indented marks are observed on pages 2, 3 and 4, resulting from the pressure exerted during the execution of the signatures, as the sheets were placed one on top of the other; while on page 1 these marks are not detected. In the three photographs presented, the superimposition of page 1 is shown, where it can be seen that the second paragraph protrudes from the margin. From the analysis of the graphic elements contained in the questioned document regarding paragraph 2, variability in the font size is observed.
BUVNT9	ESDA	No developed indentations on page 1. Signature indentations consistent with sequential "sign and fold" document completion process depicted on pages 2-4.
	Video Spectral Comparator (VSC)	Under spot fluorescence, page 1 has no response, while pages 2-4 produce a similar fluorescence.

TABLE 2

WebCode	Methods/Techniques	Observations
	Macroscopic Examination	Once the staple was removed from the 4 page questioned Will two sets of staple holes could be found on pages2-4, while only the 1 set of holes was observed on page 1. Upper left corner of pages 2-4 contain a fold crease while page 1 does not.
	Overlays	Spacing differences can be seen when overlaying 2 or more common word sequences between page 1 and page 2. However, when overlaying 2 or more common word sequences between pages 2,3,and 4, no differences were observed.
C4JRK9	Macroscopic/Microscopic Examination	Difference in staple hole number between page 1 and the other 3 pages. Differences in alignment, margins, spacing between page 1 and other 3 pages. No significant differences in printing technology/quality among pages.
	Indented Writing	Latent indentations recovered reveal pages 2-4 show indentations that suggest co-preparation, whereas page 1 showed no relevant indentations.
	Video Spectral Comparator (VSC)	NUL spectral differences.
CGJX7R	Macroscopic Examination	The difference in staple holes between the first and last page, particularly with four open holes on the last page, strongly suggests the document has been stapled, unstapled, and restapled at least twice open staple holes.
	Oblique Light	Differences in printed text between page 1 and page 2 of a four-page last will and testament shows that page 1 was printed with are different printer as compared to page 2;
	Macroscopic/Microscopic Examination	The paper quality in page 1, is different from page 2, 3 and 4, when viewed under white light and it shows that they have same composition and come from the same batch;
	Transmitted Light	Ink distribution on page 1, is not fully covering the letter "e", on page 3 it is fully covering the letter "e".
CLY9GA	Visual Examination	removed the staple and observed 2 sets of staple holes on pages 2, 3, and 4 -1 set of staple holes on page 1 pages 2, 3, and 4 were previously folded near the staple holes, page 1 was not folded near the staple holes prior to this examination
	Video Spectral Comparator (VSC)	observed indented writing on page 4 with oblique lighting- may be from page 3 spot and UV- page 1 paper is different than the paper used for pages 2,3, and 4 (source exclusion) -cannot differentiate pages 2, 3 and 4 from each other (inconclusive) 2 signatures written in black ink and 1 in blue ink -the black ink signatures on pages 3 and 4 are different with the IR and spot filters (source exclusion)
	ESDA	Q1 page 1- no indented writing developed Q1 page 2- 3 signatures developed, consistent with the signatures on pages 3 and 4 Q1 page 3- 2 signatures developed, consistent with the signatures on page 4 Q1 page 4- 1 signatures developed, consistent with the signatures on page 3
CPYJCA	Visual Examination	Page 1 has one set of staple marks and does not have a fold/crease in the left-hand corner of the page. Pages 2-4 have 2 sets of staple marks and folds/creases in the left-hand corner of the pages. Page 1 appears to have been inserted into the document after pages 2-4 were previously stapled together.
	Video Spectral Comparator (VSC)	The paper of page 1 could be differentiated from the paper of pages 2-4. The paper of pages 2-4 could not be differentiated. The printing processes used on pages 1-4 could not be differentiated. The ink from pages 3 and 4 could be differentiated. Indented writing was visible on page 4.

TABLE 2

WebCode	Methods/Techniques	Observations
	ESDA	The Testator Signature from page 3 of the Will and Testament in Item #1 was found on page 4.
D27P6N	ESDA	ESDA was used to decipher indented writing and staple holes from the document. On page 2 of the document indented signatures were deciphered. The signatures recovered in page 2 were not on page 1 of the document which indicates that alterations by means of insertion. On page 4 of the document, a signature was deciphered. Staple holes were deciphered in all the pages, however on page 2 to 4 there are more than one set of staple holes.
	Video Spectral Comparator (VSC)	In the Video Spectral Comparator, the flood lights and side lights left and right were used. The side lights revealed the indented signature on page 4. The document was magnified to show the multiple staple holes on page 2 to page 4. I observed that page 1 has only one set of staple holes which makes it different from other pages on the document.
	Magnification	The equipment that was used was magnified to reveal the different number and position of the different staple holes. The technique also revealed the indentations that were recovered on page 4.
D8WYDZ	Oblique Light	No indentations observed
	Microscopic Examination	Identified types of ink used for the handwritten portions
	Transmitted Light	No watermarks observed.
	Ruler	Measured margins, print horizontal and vertical spacing
	Macroscopic/Microscopic Examination	Examined print process and determined different print size and fonts on page 1
	Infrared Light	Examined print process on all pages for variations/reactions
	Ultraviolet Light	Examined print process on all pages for reactions to UV light
	Visual Examination	Examined binding devices on all pages - observed page 1 of 4 had different binding holds than pages 2 - 4
DD4R8W	ESDA	Indented writing on pages 2 through 4.
	Visual Examination	Secondary staple holes present in pages 2 through 4, and the lack of fold at the staple area of page 1.
	Video Spectral Comparator (VSC)	Paper did not show variation in optical properties using various ultraviolet or spot fluorescent lighting.
DNKA2N	Macroscopic Examination	Page 1 has a different quantity of staple holes compared to pages 2-4, and there are corresponding creases on pages 2-4 that are absent in page 1.
	Indented Writing	Pages 2 through 4 have indentations of the signatures, but Page 1 does not
	Transmitted Light	Page 1 has a different quantity of staple holes compared to pages 2-4.
	Microscopic Examination	Toner print process on all 4 pages has horizontal lines throughout the text. Signatures on pages 3 and 4 are original, written-ink-on-paper.
	Ultraviolet Light	Consistent reaction to UV light across pages 1-4.
	Overlays	The formatting of page 1, particularly the right margin and spacing between sections/articles and the font size of Article 1, is different than those margins and spacing found in pages 2-4.

TABLE 2

WebCode	Methods/Techniques	Observations
DQN6KR	Macroscopic/Microscopic Examination	Page 1 of the document contains a typographical/font irregularity, which is not present on pages 2, 3, and 4 Pages 2, 3, and 4 display consistent fold patterns however, page 1 does not exhibit the same fold pattern
	Transmitted Light	Page 1 of the document exhibits a violation of the right margin, which is not consistent with the formatting observed on pages 2, 3, and 4 When pages 2, 3, and 4 are superimposed they exhibit similar fibre disturbance around the staple holes, and the holes are consistent in number (4) and alignment however, page 1 displays only two staple holes, which do not correspond in number, position, nor alignment with the four-hole pattern observed on pages 2, 3, and 4
	ESDA	Pages 2 and 3 bears latent images of writing that when deciphered resembles the two signatures on page 4, no latent images were observed on page 1.
DWCV62	Microscopic Examination	Item 001 page 1 - There was one set of staple holes observed in the upper left corner of the document. The upper left corner did not contain a fold/crease. There was no indication that this page of the document was folded front or back while stapled to the other three documents. There were what appears to be two embossed pin sized impressions on the upper right side of the document. It appears that the document was embossed front to back. Item 001 page 2 - There was two sets of staple holes observed in the upper left corner of the document. The upper left corner was folded/creased forward. This indicates that the page was folded backwards while stapled to the other two documents (pages 3 and 4). There were what appears to be two embossed pin sized impressions on the upper right side and one toward the bottom middle. It appears the document was embossed front to back. Item 001 page 3 - There was two sets of staple holes observed in the upper left corner of the document. The upper left corner was folded/creased forward. This indicates that the page was folded backwards while stapled to the other two documents (pages 2 and 4). There was what appears to be one embossed pin sized impressions in the upper middle of the document. It appears the document was embossed back to front. Item 001 page 4 - There was two sets of staple holes observed in the upper left corner of the document. The upper left corner was folded/creased forward. This indicates that the page was folded backwards while stapled to the other two documents (pages 2 and 3). There was what appears to be four embossed pin sized impressions in the top middle left corner of the document. It appears that three of the pin sized embossing was front to back and one was back to front. Item 001 was printed using black only toner. Item 001 (page 3) signature was prepared using a black ballpoint pen. Item 001 (page 4) signatures were prepared using black and blue ballpoint pens.
	ESDA	Decipherable indented impressions were developed on Item 001 page 2 that are attributed to the signatures on Item 001 page 3 and page 4. Decipherable indented impressions were developed on Item 001 page 3 that are attributed to signatures on Item 001 page 4. Decipherable indented impressions were developed on Item 001 page 4 that are attributed to signature on Item 001 page 3. No decipherable impressions were developed on Item 001 page 1.
	Video Spectral Comparator (VSC)	Item 001 (pages 1 through 4) was examined using the VSC. While using side lighting observations of small pin sized embossing was noted throughout the four pages of the document. Also, the one set of staple holes on Item 001 page 1 and the two sets of staple holes on Item 001 (pages 2 through 4) were observed and imaged.

TABLE 2

WebCode	Methods/Techniques	Observations
E3WBBJ	Microscopic Examination	All pages of the document are printed with magnetic toner. They all have the same appearance regarding the printing and no changes have been seen in the printed text. All the signatures are original, not printed.
	Transmitted Light	Page 1 differs from the other pages regarding the sheet formation.
	Ultraviolet Light	Page 1 differs from the other pages regarding the UV-fluorescence.
	Infrared Light	Page 1 differs from the other pages under IR-light.
	Macroscopic/Microscopic Examination ESDA	There are no traces that the staple has been removed and replaced. Indented writing from the signature on page 3 has been developed on page 2 and 4. Indented writing from the signatures on page 4 has been developed on page 2 and 3. No indented writing has been developed on page 1.
E9NHUT	ESDA	Observations regarding the indentations from the hand-written signatures on page 2, 3 and 4. No signature indentations were observed on page 1.
	Video Spectral Comparator (VSC)	Visual examination of each page under white light, Infrared light, IR-spot light, transmitted light, and ultra-violet light in the VSC8000.
	Infrared Light	The reaction of the substrates for each page were observed under infrared light (spot light) and resulted in a visual difference in page 1. Page 1 appears to have a darker reaction in comparison to the pages 2, 3 and 4.
	Ultraviolet Light	The pages were viewed under ultraviolet light, and the reactions of the paper substrates were observed. The difference wasn't as clear as under IR spot light in the VSC, but there was a slightly darker reaction of the substrate used for page 1 in comparison to page 2, 3 and 4.
	Magnification	The toner print on each page was examined under magnification. The signatures were also viewed under magnification to see the ink characteristics.
	Ruler	The layout of the text on page 1 was measured and compared to the text layouts on pages 2, 3 and 4.
	Transmitted Light	Transmitted light and magnification was used to further examine the extra holes in page 2, 3 and 4.
EGW9WV	Macroscopic/Microscopic Examination	Scientific method taking into account the phases of: observation, indication or pointing out of distinctive characteristics (individualizing characteristics), confrontation and identity judgments.
	Video Spectral Comparator (VSC)	Macroscopy and microscopy are used in the technical-scientific methodology for the direct and instrumental observation of samples, using specialized equipment that allows, together with the different digital magnifications and the combination with lighting sources: episcopic, transmitted, grazing, oblique, retroreflective, coaxial, among others, to visualize in a general way and in detail the characteristics that the inks in a document have.
	behavior of the ink in a given range of the spectrum	Instrumental analysis techniques with different light sources (natural, episcopic, transmitted, grazing, oblique, retroreflective, coaxial, among others), electromagnetic radiation (infrared, ultraviolet, among others), band-pass filters and digital magnifications, combined with spectral analysis of infrared absorption and fluorescence, which the VSC 6000HS spectral document video comparator has, will allow to objectively establish if there are differences in the behavior of two or more types of ink in a given range of the spectrum.

TABLE 2

WebCode	Methods/Techniques	Observations
ENFEVM	Visual Examination	Ausencia de elementos de seguridad (marca de agua, tintas reactivas, fibrillas, entre otras) en el documento en general. En la sobreposición de la hoja paginada con el número 1, el texto sobresale del margen derecho a diferencia de las demás páginas. [CTS Translation: Absence of security features (watermark, reactive inks, security fibers, among others) throughout the document. On the page numbered 1, the text extends beyond the right margin, unlike on the other pages.]
	Microscopic Examination	Se observa formato impreso en láser monocromático. [CTS Translation: Monochromatic laser print format is observed.]
	Video Spectral Comparator (VSC)	Al ser sometidos a luz infrarroja (IR), se observa la hoja paginada con el número 1 una reacción diferenciada (mayor opacidad) en el papel a diferencia de las demás. Al ser sometidos a luz ultravioleta (UV) se observa la hoja paginada con el número 1 una reacción diferenciada (menor brillantes) en el papel a diferencia de las demás. En la sobreposición de la hoja paginada con el número 1 con las demás se observa que el paginado queda en la parte inferior de las demás páginas. [CTS Translation: When exposed to infrared (IR) light, the sheet numbered 1 exhibits a distinct reaction (greater opacity) in the paper compared to the others. When exposed to ultraviolet (UV) light, the sheet numbered 1 exhibits a distinct reaction (lower brightness) in the paper compared to the others. When the sheet numbered 1 is superimposed on the others, the page number appears at the bottom relative to the other pages.]
EUL9PJ	Visual Examination	From the moment the analysis was carried out without optical instruments, by performing the naked-eye observation of the questioned document being the "Last Will and Testament of Stanley Olson," which consists of 04 pages, the following was identified: - Regarding the number of staple holes, Page 1 of 4 presents a smaller number of holes compared to the rest of the pages. - When observing the margins against the light, the texts of Page 1 of 4 - Left side: exceed the margins of the rest of the pages. - Right side: only the word "All" in the section "Article 1" "Family Identification" greatly exceeds the margins of the rest of the pages. That is, they present uneven margins.
	Video Spectral Comparator (VSC)	The above was confirmed in the following stages, that is, the differences regarding the staple holes were evident through the use of optical devices and specialized equipment. It is worth mentioning that regarding the specialized equipment, in this case the VSC-8000 Foster+Freeman, when performing ink discrimination and using the different forensic lights, no additional anomalies were shown.
	ESDA	No signs of additional and/or atypical grooves were identified.
FEMH8R	Macroscopic Examination	Inconsistent number of staple holes: Page 1 is secured with a single staple, whereas pages 2 through 4 exhibit an additional set of staple holes. The additional staple holes on pages 2 through 4 are not present on page 1, indicating that pages 2 through 4 were previously bound together independent of page 1.
	Transmitted Light	Inconsistent alignment of page numbering on page 1 compared to those on pages 2 through 4. Examination under transmitted light revealed that the alignment of "Page 1 of 4" is slightly offset relative to the positioning of the page numbering on pages 2 through 4.

TABLE 2

WebCode	Methods/Techniques	Observations
	ESDA	Indented writing consistent with the signatures on pages 3 and 4 was observed on page 2, indicating that page 2 was positioned directly beneath the signature pages at the time of execution. Corresponding indented writing was not observed on page 1, indicating it was not in the same position within the document stack at the time the signatures were applied.
	Thickness	A slight difference in paper thickness between page 1 and the remaining pages 2 through 4.
FK8JM6	Visual Examination	Each page of the document is of the same type of writing-printing-copying paper, of which the 2nd, 3rd and 4th pages are identical in tone, color and overview image, while the first page has the listed features to a minimal extent, but differs from the others.
	Macroscopic/Microscopic Examination	The text on all pages was displayed using a monochrome laser printer with an electrophotographic operating principle. Examining the stapling of the sheets, it can be established that on the first sheet only the pair of holes caused by the current staple can be identified, while on sheets 2, 3 and 4, an additional pair of holes that fit exactly together can also be observed in the same place. The paper material of the latter also has a fold edge along the first staple applied in the same place.
	ESDA	The imprints of the testator's and witness 2's signatures can be detected on the other pages of the document.
FKC4B8	Visual Examination	There was a single staple in the top left corner of Q-1, which was removed for further examination. Page 1 had no additional staple holes with pages 2-4 had additional staple holes and fold marks that page 1 did not have by the stapled area. Page 4 also has an impression of the legs of a staple, not from the one that was attached when received. There were no impressions/indentations noted. The paper of page 1 was also slightly different in color compared to pages 2-3, which were visually the same color.
	Oblique Light	Pages 1-3 were negative for any impressions/indentations. Page 4 was positive for impressions, which was found to correspond to the signature found on page 3.
	Video Spectral Comparator (VSC)	Zoomed in on the staple holes of pages 1-4. Zoomed in on page 4 for the signature impression.
GBFMY9	Oblique Light	No indentations observed on page 1 and 2, embossed indentations observed on page 3 and 4.
	Visual Examination	Multiple staple holes observed.
	Video Spectral Comparator (VSC)	Paper fibers observed fluorescing on pages 1, 2, 3 and 4. On page 3 and 4, ink was observed dropping out. Inks were observed fluorescing on pages 3 and 4.
	ESDA	No indentations observed on page 1. Indentations observed on page 2, 3, and 4.
GCB7ZA	Macroscopic/Microscopic Examination	We found folding marks on the corner of pages 2-4, next to the staple, that do not appear on page 1. Moreover, we found another set of empty staple holes next to the existing staple on pages 2-4 that do not appear on page 1. We found that the printing method used on all 4 pages is black toner.
	Oblique Light	We found on page 4 indented writing of the signature appearing on page 3 and also found on page 2 indented writing of the lower signature appearing on page 4.

TABLE 2

WebCode	Methods/Techniques	Observations
	ESDA	We found on page 2 indented writing of the signatures appearing on pages 3 and 4. We found on page 4 indented writing of the signature appearing on page 3 and also found on page 3 indented writing of the signatures appearing on page 4. We didn't find any indented writing on page 1, which means that page 2 was right underneath pages 3 and 4 when the signatures were written and page 1 wasn't there.
	Video Spectral Comparator (VSC)	Under UV and IR we didn't find any meaningful findings.
GL3NG4	Macroscopic/Microscopic Examination	1.- Binocular Stereoscope Wild Heerbrugg M3Z. Microscopic examination verified that the printed text on document Q1 was original, meaning it was printed directly onto the paper. The identifying characteristics of the printed characters were established, including size, font size, morphology, and lettering styles. Macroscopic examination was used to verify each character and all the text on the document to determine the printing method used.
	Video Spectral Comparator (VSC)	2.- Video Spectral Comparator VSC 6000/HS. Photospectrometric analysis of inks in the printed text of the document was performed, but no differences were found. Ultraviolet light (254nm–365nm) was used. The reaction of each sheet of document Q1 was verified, but no characteristics demonstrating modification or differences were detected, specifically between sheet "Page 1 of 4" and the others "Page 2 of 4," "Page 3 of 4," and "Page 4 of 4." Transmitted light was also used. In general, perfect matches were verified between the printed texts of homologous characters with respect to margins, left-aligned words, and line spacing, but no differences were found. The sizing of the paper on each page of the document was observed, and similar light-dark tones were detected in the structure, with no differences between them. Considering the linear holes in the upper left corner caused by the staples on each of the Q1 sheets, there is a discrepancy in position and quantity between "Page 1 of 4" and the others "Page 2 of 4", "Page 3 of 4", and "Page 4 of 4". Under high magnification, the sizing or gluing of the paper on each page of the document was observed, and similar compositional characteristics were detected on their surface, with no differences between them.
	Visual Examination	3.- Visual examination or observation with the naked eye. In general, each of the sheets of the document was observed to verify similarities in size, texture, color and shape characteristics and matching of papers, printed texts and ink intensities.
GLX6TZ	ESDA	On page 1 of 4, no traces, grooves, mark residues, or indications of indentation are observed. On page 2 of 4, the presence of indentations corresponding to the signatures located on page 4 of 4 (of marked intensity) and page 3 of 4 (of faint intensity) is observed. On page 3 of 4, a faint indentation attributable to the signatures present on page 4 of 4 is observed. However, the strokes of the signature executed by the testator (Stanley Olson) on this same page 3 of 4 are clearly identifiable. On page 4 of 4, a marked indentation corresponding to the testator's signature originating from page 3 of 4 is observed. Nevertheless, the strokes of the signatures executed by the witnesses are present and visible on the aforementioned page (4 of 4).

TABLE 2

WebCode	Methods/Techniques	Observations
	Video Spectral Comparator (VSC)	Through comparative optical examination, it was determined that pages 2 of 4, 3 of 4, and 4 of 4 exhibit fibers with equivalent physical characteristics, consistent with one another. However, page 1 of 4 displays physical characteristics that differ from those observed in the remaining pages, suggesting variations in its origin or in the batch of paper used. Similar physical characteristics were identified in the printing method and in the composition of the toner used to produce the content on pages 1 of 4, 2 of 4, 3 of 4, and 4 of 4, suggesting uniformity in the printing process or in the equipment utilized.
	Microscopic Examination	It was observed that all four pages are stapled together. Page 1 of 4 contains only the perforations corresponding to the current staple. In contrast, pages 2 of 4, 3 of 4, and 4 of 4 show two additional perforations, indicative of having been previously fastened with another securing element or of having been re-stapled on more than one occasion. On page 3 of 4, a small fold is observed on the upper left edge.
H6Q8A2	Macroscopic Techniques (physical, visual)	Item Q1 consists of four (4) pieces of paper that are printed. Item Q1, pages 3 and 4, contain handwritten signatures.
	Indented Writing (ESDA, side lighting)	Item Q1, page 2, contains indented impressions that can be definitively sourced to handwritten entries on Item Q1, pages 3 and 4. Item Q1, page 3, contains indented impressions that can be definitively sourced to handwritten entries on Item Q1, page 4. Item Q1, page 4, contains indented impressions that can be definitively sourced to handwritten entries on Item Q1, page 3. Item Q1, page 1, contains no discernible sourced or unsourced indented impressions.
	Paper Examination (ruler, micrometer, VSC)	Ruler examination revealed that Item Q1, pages 1 through 4, each measure approximately 8 ½" x 11". Micrometer examination revealed that Item Q1, pages 1 through 4, each measure approximately 0.07mm - 0.08mm in thickness. VSC examination revealed that Item Q1, page 1, displays a different reaction under some light sources than Item Q1, pages 2 through 4.
	Ink Examination (macroscopic, microscopic, VSC)	The printing on Item Q1, pages 1 through 4, is produced with black toner. No dissimilarities were noted in the toner. The signature on Item Q1, page 3, is produced with a black non-ballpoint writing instrument. The upper signature on Item Q1, page 4, is produced with a blue ballpoint writing instrument, and the lower signature is produced with a black ballpoint writing instrument.
	Staple and Fold Examinations (macroscopic, microscopic, ruler, VSC)	Item Q1, pages 2 through 4, contain evidence of two (2) staples. Item Q1, page 1, contains evidence of one (1) staple. Item Q1, pages 2 through 4, contains evidence of previous folding in the upper left corner. Item Q1, page 1, was not previously folded.
	Font and Formatting Examinations (ruler, VSC, font classification)	The spacing and formatting on Item Q1, page 1, is inconsistent with Item Q1, pages 2 through 4. Spacing dissimilarities are present in the Article I sentence, with justification on the right being smaller, and spacing between Article I and Article II being larger than other areas of the document. Item Q1, pages 1 through 4, was produced in the serif-style, Times New Roman font. Item Q1, page 1 "Article I" first line font, is slightly larger than the font on the rest of the document.
HCRMV3	Visual Examination	and magnification: An inconsistency was identified in the fastening of the questioned document: "Page 1 of 4" only shows perforations from a single fastener, while the remaining sheets "Page 2 of 4", "Page 3 of 4" and "Page 4 of 4" show evidence of having been secured by two fasteners.

TABLE 2

WebCode	Methods/Techniques	Observations
	Video Spectral Comparator (VSC)	Multispectral analysis (ultraviolet, infrared light, and transmitted light) revealed discrepancies in the absorption and fluorescence processes of the inks used for printing texts. Specifically, the texts on page 1 of 4 show greater accumulation, heterogeneity, and chromatic intensity of the inks, in contrast to the poor uniformity, lower chromaticity, and reduced intensity observed on pages 2 of 4, 3 of 4, and 4 of 4.
	Macroscopic Examination	Differences in optical density and chromatic saturation were identified: the text on 'Page 1 of 4' exhibits a higher ink load and a darker tone, whereas the remaining pages ("Page 2 of 4", "Page 3 of 4" y "Page 4 of 4") show lower density and a fainter appearance.
HDM38Z	Video Spectral Comparator (VSC)	The entire document is analyzed applying light filters, it is determined that there is no difference in the brightness and opacity of the paper used in the 4 sheets
	Ultraviolet Light	There is no difference in the brightness of the paper used in the 4 sheets
	Overlays	The pages are superimposed with transmitted light in order to observe the right margin, in which there is no match since the right margin of the second paragraph corresponding to 'Article I' varies in relation to the rest of the document
	Visual Examination	The difference in the font size of the letters and the letter "I" is observed. Since the paragraph corresponding to "Article II" the initial uppercase letter "I" has a different font type than the rest of the uppercase "I" letters observed in the document
	ESDA	To verify that the sketch on page 4 matched the signature on page 3—indicating that these two documents are indeed part of the original contract or were created in the same sequence.
	Macroscopic/Microscopic Examination	The distribution of the paper fibers differs: on folios 2, 3, and 4, the whitish gaps between the fibers are visible within vertically arranged interstices; whereas on folio 1, they appear more closely spaced and disordered.
HGLJH9	ESDA	Signatures for Ex 1(4) are indented on Exhibit 1(2), 1(2) back, 1(3), 1(3) back, and 1(4) back. Signatures from Exhibit 1(3) are indented on Exhibit 1(2), 1(4), and 1(4) back. No indented signatures observed on Exhibit 1(1) or 1(1) back.
	Video Spectral Comparator (VSC)	No significant optical differences observed in paper or printing.
	Visual Examination	Exhibit 1(1) appears to have one set of staple holes. Exhibit 1(2-4) appear to have two sets of staple holes.
HLWQLX	Transmitted Light	It is used to observe staple alignments and text.
	Video Spectral Comparator (VSC)	It is used to observe staple alignments and text.
HUVA73	Visual Examination	The will relating to the deceased Stanley Olson is observed, consisting of four letter-size sheets, digitally printed, with pages 1 of 4, 2 of 4, 3 of 4 and 4 of 4, in which the capitulations of the will are observed indicating the beneficiaries and distribution of his assets, the same 4 sheets are stapled in the upper left corner of the document

TABLE 2

WebCode	Methods/Techniques	Observations
	Macroscopic/Microscopic Examination	-On the first page (1 of 4), there is a single staple hole. The remaining three pages (2 of 4, 3 of 4, and 4 of 4) each have two staple holes, located in the upper left corner of the document. - Pages 2 of 4, 3 of 4, and 4 of 4 have diagonal folds located between the staple holes. - On page 1 of 4, in the section "Article I," specifically the first line of text, the text extends beyond the right margin, compared to the text on the remaining pages (2 of 4, 3 of 4, and 4 of 4).
	Video Spectral Comparator (VSC)	1. Upon examining the pages, it can be observed that the first page (1 of 4) has a different substrate tone compared to pages 2 of 4, 3 of 4, and 4 of 4. 2. The printed text on the first page (1 of 4) has a stronger tone due to the toner particles, while the remaining three pages (2 of 4, 3 of 4, and 4 of 4) have a more subdued or faded tone. 3. When viewed at a raking light, pages 2 of 4, 3 of 4, and 4 of 4 show a diagonal crease in the upper left corner between the staple holes. The first page (1 of 2) shows no crease. 4. Upon closer inspection of the printed text and applying transmitted light to page 1 of 4, it can be observed that the printed text has a stronger tone and less transparency compared to the other pages of the will (pages 2 of 4, 3 of 4, and 4 of 4), which exhibit greater transparency when exposed to transmitted light. 5. When the first page (1 of 4) is superimposed on the second page (2 of 4) of the text belonging to "Jasmine Olson," a misalignment of the text on both pages is observed. The text on the first page (1 of 4) appears more widely spaced than on the second page. 6. When the first page (1 of 4) is superimposed on the second page (2 of 4) of the text belonging to "Cody Olson," a misalignment of the text on both pages is observed. The text on the first page (1 of 4) appears more widely spaced than on the second page.
	[CTS Translation: Method for examining abnormalities]	The indicated method was developed consistently as follows: Step 1: Analysis of the questioned document. Stage 1: Preliminary analysis. Stage 2: Analysis without instruments. Stage 3: Analysis with optical instruments. Stage 4: Analysis with specialized equipment. Step 2: Analysis of results. Step 3: Conclusion.
HZY3EC	Visual Examination	All pages except page 1 had an extra set of staple holes and a fold. The language on page 1 was inconsistent with page 2 when referring to the surviving beneficiaries' city and state on page 1 of Article III that states "Sterling, Virigina" vs. "of Sterling, Virginia" on page 2.
	Video Spectral Comparator (VSC)	Oblique light, transmitted light, UV, or magnification were used to observe the following: An extra set of staple holes was present on pages 2-4 except page 1. A fold was present on pages 2-4, but not on page 1. Observed no watermarks on any of the pages or differences in paper brighteners. All signatures were produced with a writing instrument.
	ESDA	Pages 2-4 had indentations of the signatures as expected on each document since these pages were initially stapled and folded behind each other. No writing impressions of discernable significance were found on page 1. Page 1 not having any signature indentations further supports that this page was not stapled to pages 2-4 at the time of signing. However, this does not exhibit any evidence on whether or not page 1 was printed at the same time as the other pages. EDD lifts of the roller marks were prominently visible on the back side of all the pages vs. the front side. Pages 1-4 exhibited consistent roller marks.

TABLE 2

WebCode	Methods/Techniques	Observations
	Overlays	The first line under the "Article I" header that reads, "The names of... Bradley Olson. All" is larger than the other printed information on this page as well as the other pages when similar words from this line is overlaid. Also, this line is outside the right-side margin as observed when all the transparency pages were overlaid with one another.
	Magnification	All 4 pages were produced on a toner printing process machine. The toner printing process on all the pages had an unusual banding that is typically a characteristic of ink jet printing processes. This characteristic could also possibly be a toner saving mode that was used in the printer setting.
	E-Ruler	The E-Ruler was not used as a critical measurement tool, but as a comparative tool. The first line under the Article I header that reads, "The names of... Bradley Olson. All" is larger than the other printed information on this page as well as the other pages.
HZYZP8	Macroscopic/Microscopic Examination	There are marks left by staples in the top left corners of pages 2, 3 and 4, indicating that these pages were previously stapled together. However, there are no such marks on page 1. There is also a bend in the paper in the top left corners of pages 2, 3 and 4, which is not present on page 1.
	ESDA	There are no signature reliefs (indented impressions) on page 1. Page 2 contains the signatures reliefs from pages 3 and 4. Page 3 contains the signatures reliefs from page 4. Page 4 contains the signature relief from page 3.
	Video Spectral Comparator (VSC)	Pages 2, 3 and 4 are characterised by a uniform luminescence of the paper in the near-infrared range. However, this differs from the luminescence observed in page 1.
J3K8MA	Visual Examination	The questioned document (Q1) consisted of four pages, consecutively numbered pages (page 1 of 4 through page 4 of 4). There were no extraneous markings observed on any of the pages of the questioned document. The questioned document was found to be stapled at the upper left corner. When the staple was carefully examined, it was observed that pages 2 of 4, 3 of 4, and 4 of 4 each contained multiple staple pin holes and perforations in the upper left corner. Whereas page 1 showed only one pair of staple pin holes, matching the position of the current staple. Page 1 of 4 did not have the extra holes or perforations seen on the consecutive pages 2 of 4, 3 of 4 and 4 of 4. The currently present staple passes through all four pages however, the pattern of multiple pin holes indicates that the present binding is not the original binding for pages 2 of 4, 3 of 4 and 4 of 4. The observed irregularities in stapling and perforation patterns is indicative of prior disassembly and reassembly of the questioned document. Consequently, the possibility of page substitution cannot be ruled out.

TABLE 2

WebCode	Methods/Techniques	Observations
	Mass measurement	The mass of each page of the questioned document was separately measured using a calibrated analytical balance (accurate to 0.0001g). Page 1 of 4 weighed 4.3614g, page 2 of 4 weighed 4.6907g, page 3 of 4 weighed 4.6906g and page 4 of 4 weighed 4.6390g. Page 1 of 4 was the lightest of all four pages, with a mass of 4.3614 g. Pages 2 of 4 and 3 of 4 were nearly identical in mass (difference of only 0.0001g). Page 4 of 4 (4.6390g) is slightly lighter than pages 2 of 4 and 3 of 4 but significantly heavier than page 1 of 4. The percentage difference of pages 2 of 4, 3 of 4 and 4 of 4 from page 1 of 4 was calculated. The difference between page 1 of 4 and page 2 of 4 was 0.3293g (approximately 7.5% lighter). The difference between page 1 of 4 and page 3 of 4 is 0.3292g (approximately 7.5% lighter). The difference between page 1 of 4 and page 4 of 4 is 0.2776g (approximately 6.4% lighter). The maximum intra-group variation among pages 2 of 4, 3 of 4 and 4 of 4 is 0.0517g (approximately 1.1%) Typical office paper exhibits batch-to-batch mass variation of 1-2% range. The near-identical masses of pages 2 of 4 and 3 of 4 (4.6907g vs 4.6906g) indicate they originated from the same paper stock. Page 4 of 4, while heavier than page 1 of 4, is slightly lighter than pages 2 of 4 and 3 of 4. This could be due to trimming variation or differences in moisture content. The maximum intra-group variation among pages 2 of 4, 3 of 4 and 4 of 4 (1.1%) falls within acceptable limits (1-2%) for a single paper batch. The substantial mass difference between page 1 of 4 and pages 2 of 4, 3 of 4 and 4 of 4 is more than 6% in all comparisons and therefore cannot be attributed to normal manufacturing variation within a single ream of paper.
	Infrared Light	Using a Video Spectral Comparator (Regula 4308), each page was examined at an excitation wavelength of a 395nm light source and detection within 610-1000nm spectral range. Page 1 of 4 appeared noticeably darker than all other pages. It showed the least luminescence (glow) of any page. Pages 2 of 4 and 3 of 4 appeared consistent with each other and were slightly brighter than page 4 of 4. Page 4 of 4 appeared noticeably lighter (brighter) than page 1 of 4, but slightly darker than pages 2 of 4 and 3 of 4. In other words, page 4 of 4 fell between page 1 of 4 (darkest) and pages 2 of 4 and 3 of 4 (brightest). Pages 2 of 4 and 3 of 4 behave identically, meaning they likely came from the same batch of paper. Page 4 of 4 is similar but not identical to pages 2 of 4 and 3 of 4. Page 1 of 4 was completely different from all the other pages.
	Magnification	Each page of the questioned document was examined at 13x and 40x magnification using Video Spectral Comparator (Regula 4308) to assess printed text characteristics. The following features were observed on all four pages; Ragged (irregular) edges along the letters, ink spattering around the letters and characters, small gaps or voids inside some letters, bleeding into paper fibers, no toner fusion was observed when examined using oblique lighting, subtle trailing or tailing of ink droplets in a consistent orientation (that is left-to-right) was observed, indicative of the printhead travel direction during inkjet printing. These characteristics are indicative of use of inkjet printer technology on all four pages. Therefore, this suggests that pages 1 of 4, 2 of 4, 3 of 4 and 4 of 4 were produced using an inkjet device.
JFK3K2	Macroscopic/Microscopic Examination	Toner printing process, black non-ball point ink, blue and black ball point ink

TABLE 2

WebCode	Methods/Techniques	Observations
	Video Spectral Comparator (VSC)	Paper reacts similarly, indented machine-created impressions observed on all pages, indented handwriting impressions observed on pages 2 through 4
	ESDA	Indented machine-created impression observed on all four pages and these impressions are similar in type and design; indented handwriting impressions observed on pages 2 through 4 and not on page 1
	Magneto-Optical Visualizer (MOV)	Toner has magnetic properties on all four pages
	Handwriting Examination	Signatures on pages 3 and 4 are suitable for comparison
JN47UP	Video Spectral Comparator (VSC)	using a video spectral comparator, the documentary substrate was exposed under different lighting conditions—incident and transmitted light—to identify, through physical phenomena of luminescence, any characteristics or elements indicative of alteration. The analysis revealed that the document, consisting of four (4) pages corresponding to Mr. Stanley Olson's will, presents relevant peculiarities: on page 1, the text of the first line of Article I extends beyond the left margin, an issue not present on the other pages; additionally, there is greater spacing between paragraphs I and II, while in the rest of the document the intervals between paragraphs are shorter and more uniform. Similarly, it was found that pages 2 through 4 have double perforations in the area corresponding to the staple, in contrast to page 1, which only has one perforation.
	Magnification	using a video spectral comparator, the documentary substrate was exposed under different lighting conditions—incident and transmitted light—to identify, through physical phenomena of luminescence, any characteristics or elements indicative of alteration. The analysis revealed that the document, consisting of four (4) pages corresponding to Mr. Stanley Olson's will, presents relevant peculiarities: on page 1, the text of the first line of Article I extends beyond the left margin, an issue not present on the other pages; additionally, there is greater spacing between paragraphs I and II, while in the rest of the document the intervals between paragraphs are shorter and more uniform. Similarly, it was found that pages 2 through 4 have double perforations in the area corresponding to the staple, in contrast to page 1, which only has one perforation.
JNYRLV	Visual Examination	A visual examination showed that page 1 had one set of staple holes in upper left hand corner. Pages 2, 3, and 4 had two sets of staple holes.
	Transmitted Light	Transmitted light showed a right-margin difference between page 1 and pages 2, 3, and 4. On page 1, Article I, Line 3, the line is approximately 1 cm longer than the signature lines on page 4. Line 3 is where the children's names are written on page 1. The line states: "The names of my children are Cody Olson, Jasmine Olson, Kyle Olson, Jenna Olson, and Bradley Olson. All".
	Ultraviolet Light	Shortwave ultraviolet light showed differences in paper brightness between page 1 and the subsequent pages (pages 2, 3, and 4).
JXPDP9	Macroscopic/Microscopic Examination	Machine printing on Pages 1 through 4 is toner; Page 1 has 1 set of staple holes, Pages 2 through 4 have more than 1 set of staple holes.
	Video Spectral Comparator (VSC)	Page 1 has different optical properties than Pages 2 through 4. Pages 2 through 4 have similar optical properties.

TABLE 2

WebCode	Methods/Techniques	Observations
	ESDA	Page 2 has indented impressions sourced to the signatures on Pages 3 and 4; Page 3 has indented impressions sourced to the signatures on Page 4; Page 4 has indented impressions sourced to the signature on Page 3. Page 1 does not have any discernible indented impressions.
KC2BAY	Macroscopic/Microscopic Examination	Visual and stereomicroscopic observation showed that Page 1 had undergone one stapling event and had no creasing, while Pages 2 to 4 had undergone two stapling events and had associated creasing in the top-left corner associated with the folding of a stapled package.
	ESDA	Pages 2 to 4 each had signature indentations: Page 3 and 4 onto Page 2, Page 4 onto Page 3, and Page 3 onto Page 4. This is consistent with all signatures having been written after the package was stapled and folded over, except that Page 1 should have also showed indentations from Pages 3 and 4, but Page 1 had no legible indentations.
	Video Spectral Comparator (VSC) Overlays	Page 1 had a different spectral response (absorption / appears darker) than Pages 2 to 4, especially in the 400-600 nm range. A grid and overlays were created in Photoshop and the alignment of printed text was compared between all pages. Inconsistencies were observed in the paragraph under Article I on Page 1 such as font size and horizontal spacing compared to the other text on the same page and Pages 2 to 4.
	MagMouse	All pages were printed using black-only magnetic toner (monocomponent) electrophotography. There were no anomalies.
KC7R8X	Visual Examination	Staple Holes – two pairs of staple holes were observed in pages 2 through 4 of the bound document. Page 1 only contained the single set (for the staple that was binding the four pages together). Creasing – There was a crease in the paper at the top left corner (of some pages) that was consistent with pages being folded back for signatures being written on pages 3 and 4. This creasing was observed on pages 2 through 4. There was no corresponding crease on page 1.
	ESDA	An examination for indented impressions was conducted. The signature on page 3 was found to have left impressions on pages 4 and 2. The signatures on page 4 were found to have left impressions on pages 2 and 3. Page 1 had impressions on it that were not present on other pages of the document. Page 1 did NOT contain indentations from the signatures on pages 3 or 4.
	Video Spectral Comparator (VSC)	Ultraviolet 365nm radiation examination, for optical brighteners. The UV365 exam produced a differing fluorescence for page 1 as compared to the other pages. Pages 2 through 4 produced a brighter reaction (page 1 was darker).
KKDL2Q	Video Spectral Comparator (VSC)	Using the technique of overlapping the pages, the following differences were found: - The line listing the names of Mr. Stanley Olson's children on page 1 is longer. - The page numbers at the bottom of the page are misaligned with the other pages. - The line spacing between the last line of "Article I - Identification of Family" and "Article II - Payment of Debts and Expenses" exceeds the average spacing between the "Article" headings of 13 mm on the other pages of the will in question.
	Macroscopic Examination	Pages 2, 3, and 4 show evidence of additional staple perforations, not present on page 1.
KUZQ86	Visual Examination	Images of the patterns of the staple holes on both sides of all the pages of Q1 were captured.

TABLE 2

WebCode	Methods/Techniques	Observations
	Scanner	High resolution scans of the signatures on pages 3-4 of Q1 were captured.
	Oblique Light	Images of observed embossed writing on the backs of pages 3 and 4 of Q1 were captured utilizing the side light feature of the VSC.
	ESDA	Indented writing was observed on pages 2-4 of Q1. ESDA lifts were preserved from the front and back of all pages of Q1.
	Video Spectral Comparator (VSC)	Infrared Reflectance Properties of the signatures on pages 3 and 4 were examined and captured. All signature inks appeared lighter and were barely visible when viewed through the VSC RG1000 camera filter.
	Video Spectral Comparator (VSC)	Infrared Luminescence properties of Q1 were examined with the VSC. All inks luminesced. Additionally, luminescing particles were observed on all pages of Q1. Images were captured to document the luminescence.
	Video Spectral Comparator (VSC)	Magnified images were captured to document characteristics of the printing processes on all pages of Q1.
KYFV9K	Visual Examination	The questioned document is a four-page Last Will and Testament printed on white paper. The pages are labeled 1, 2, 3, and 4. Each page measures approximately 216 × 278 mm. No differences were observed in paper color, line spacing, or font across the four pages. Pages 1, 2, and 3 have left-aligned margins, while page 4 has justified margins. Page 1 has a narrower right margin compared to pages 2, 3, and 4. The four pages are fastened together with a single staple. On the back of page 4, an additional set of staple marks is visible. After removing the staple, an extra set of staple marks is also visible on pages 2 and 3. No additional staple marks are present on page 1. This indicates that pages 2, 3, and 4 (together with an unknown page 1) were previously stapled together with a different staple. At a later stage, that staple was removed, and pages 2, 3, and 4 were re-stapled with a new page 1 using the current staple.
	Magnification	The text on the front of each page is printed in black toner. The print quality appears consistent across all pages. The signature on page 3 is an original, handwritten signature executed with a black ink writing instrument. The signatures on page 4 are original, handwritten signatures executed with ballpoint pens using blue and black ink, respectively.
	ESDA	An Electrostatic Detection Apparatus (ESDA) was used to search for indented impressions on both sides of each of the four pages. The ESDA examination showed no indented impressions on page 1. The ESDA examination showed indented impressions on page 2 from the signature on page 3 and the signatures on page 4. The ESDA examination showed indented impressions on page 3 from the signatures on page 4. The ESDA examination showed indented impressions on page 4 from the signature on page 3. The above mentioned results indicate, that the signatures have been written in this order: Page 2 is moved underneath page 4. Page 3 is signed. Page 3 is moved underneath page 2. Page 4 is signed. Page 4 is moved underneath page 3. Since page 1 doesn't have any indented impressions, it's most likely that page 1 was not stacked with page 2, 3 and 4, when page 3 and 4 were signed.
	Video Spectral Comparator (VSC)	Doing a color examination using different light sources (spot filters), there is a difference in the fluorescence of page 1 compared to page 2, 3 and 4. No UVPL's were observed on page 1, 2, 3 and 4.
	Micrometer	Page 1 has a thickness of approximately 0.103 mm, whereas pages 2, 3, and 4 each measure approximately 0.110 mm in thickness.
	Weight	Page 1 weighs approximately 4.45 g, whereas pages 2, 3, and 4 each weigh approximately 4.70 g.

TABLE 2

WebCode	Methods/Techniques	Observations
KZCCKH	ESDA	1.1 There is no indented writing (signature) on page of the document. 1.2 There is indented writing (signature) on page 2 of the document. 1.3 There is indented writing (signature) on page 3 of the document. 1.4 There is indented writing (signature) on page 4 of the document.
	Video Spectral Comparator (VSC)	1.1 There is one stapler hole on page 1 of the document. 1.2 There are multiple stapler holes on page 2 of the document. 1.3 There are multiple stapler holes on page 3 of the document. 1.4 There are multiple holes on page 4 of the document.
	Transmitted Light	
L87ZC7	ESDA	Found indentations from signatures on pages 3 and 4 indented on pages 2, 3 and 4, but not on page 1.
	Oblique Light	Found indentations of signatures, or fragments of signatures, on pages 2 and 4.
	Video Spectral Comparator (VSC)	Using a VSC and infrared luminescence, found page 1 did not luminesce, but pages 2, 3, and 4 did. Also compared inks used for signatures. Made various images.
	Microscopic Examination	Determined that different inks were used for the signatures. Found no difference in toner.
	Visual Examination	Located staple holes and creases on pages 2, 3, and 4, but not on page 1. Found no difference in the font for page 1 when compared to pages 2, 3, and 4.
	Transmitted Light	Used for images of staple holes. Examined fiber patterns in paper. Examined alignment of text with page 1 to other pages of the will. Page 1 was misaligned.
	Ultraviolet Light	Compared UV fluorescence of the pages. Found no difference.
LDVDF	ESDA	ESDA lifts overlayed with signatures
	Video Spectral Comparator (VSC)	
LQJFWL	Magnification	I observed that there is indented signatures impressions on page 2 to page 4 of the Will.
	Video Spectral Comparator (VSC)	I observed that there is indented signatures on page 4 of the Will , using the side lights.
LQJFWL	Magnification	Using magnifying glasses of varying magnification, the following were verified: Printing characteristics and font type. Possible physical alterations to the document. Stapling pattern of the pages.
	Video Spectral Comparator (VSC)	The questioned document was examined using this equipment, verifying the following aspects: The document was subjected to UV and IR light to detect possible alterations in the printed text. Using raking light, the staple perforations were analyzed, noting the number of perforations per sheet. It was observed that page 1 had two perforations, unlike the other pages, which had a greater number. Furthermore, the perforations on page 1 were well-defined, while those on the other sheets were distorted. Using transmitted light to evaluate the uniformity of the printed content, it was observed that the right margin of the text on the first sheet differed from the alignment on the subsequent sheets. Through direct observation and the support of VSC8000 measurement tools, it can be seen that the "TITLE II" of the document presents a difference in the interlinear space with respect to the title of the rest of the document.

TABLE 2

WebCode	Methods/Techniques	Observations
M4YX4F	ESDA	Page 4 contains two (02) signatures. The indented impressions of these signatures were detected on pages 2 and page 3. Page 3 contains one signature. The indented impression of this signature was detected on page 4
	Video Spectral Comparator (VSC)	Page 1 displays two (02) staple holes whereas page 2, page 3 and page 4 displays multiple staple wholes.
	Visual Examination	Page 1 is not vertically aligned with page numbering position whereas page 2 to page 4 demonstrates consistent alignment relative to their respective page numbering.
M4YZTK	Macroscopic/Microscopic Examination	Pages 2 through 4 of Item 1 (Item Q1) displayed a fold and extra set of staple holes in the upper left corner. No fold or extraneous staple holes were observed on page 1 of Item 1. Spacing differences were observed within words appearing in the first line of text under Article I (page 1) compared to other comparable entries within page 1 and pages 2 through 4 of Item 1 (Item Q1). Differences in alignment of text along the right margin for the Article I and Article II paragraphs of page 1 were also observed when compared to the remaining paragraphs on page 1, as well as pages 2 through 4 of Item 1 (Item Q1). Variance in fonts and formatting were observed throughout the Item 1 (Item Q1) document, to include an instance of sans serif font (limited entry on page 1), mixed quotes (all pages), and justification (page 4).
	Indented Writing	Indented writing was observed on pages 2 through 4 of Item 1 (Item Q1) using oblique lighting and/or electrostatic processing. This indented writing was attributed to the written signatures on page 4 and/or page 3. No indented writing was observed on page 1 using the aforementioned techniques.
	Video Spectral Comparator (VSC)	Inconsistencies in the fluorescent properties of page 1 of Item 1 (Item Q1) compared to pages 2 through 4 were observed. No variation in reaction was observed among any of the pages when examined using UV (365nm). All pages of Item 1 (Item Q1) were prepared using magnetic toner printing technology.
MH7QVT	Visual Examination	No signs of alteration (traces of mechanical, chemical, thermal effects) were identified in the printed text of the will. Proportionality is maintained in the arrangement of the parts of the document, the distances between lines, between words and letters are proportional, etc.
	Microscopic Examination	The printed text was identified to have characteristics characteristic of an electrophotographic printer, with printing marks on the writing movement and marks from the roller of the writing instrument ets.
	Video Spectral Comparator (VSC)	With the help of UV and IR light waves, and with the help of angled lighting, it was determined that there were no signs of mechanical erasure in the printed text and signatures, and that the colors of all three signatures were different.
MHHPQ2	Visual Examination	For the sheets 2, 3 and 4, we observe four staple holes and one fold in the upper-left corner. Whereas on the first sheet, we observe only 2 staple holes and no fold. We also notice differences in the layout between page 1 and the other pages.
	Macroscopic/Microscopic Examination	All pages are printed in black toner only. Pages 3 and 4 are signed in pen.
	ESDA	Mechanical marks of printer drive rollers are revealed on all 4 pages and show no significant differences. The 3 handwritten signatures are revealed on pages 2, 3 and 4, but not on page 1.

TABLE 2

WebCode	Methods/Techniques	Observations
	spectroscopic analysis (Raman/FTIR/XRF)	Based on the analytical results obtained, the toner present on the four pages are not different.
	Video Spectral Comparator (VSC)	The paper substrates have no physical or optical differences (dimensions, weight, color, internal paper structure, UV reaction, wire structure)
MXT7W4	ESDA	Roller marks observed on ESDA. 1st page no indented impressions. Indented writing observed on 2nd page of Q, signatures from pages 3 and 4. Indented writing observed on page 3, signatures from page 4. Indented writing observed on page 4m signature from page 3.
	Microscopic Examination	Observation of staple marks and folds
	Ultraviolet Light	Comparison of the paper, very slight difference observed on page 1 at 254 nm.
N2PEG6	Macroscopic/Microscopic Examination	The four pages of the will were stapled together on receipt. The last three pages contained an additional set of staple holes, indicating they had previously been stapled. The first page did not contain this additional set of staple holes. All four pages have been printed using black toner. The three signatures within the document are all original signatures and have been produced using different inks.
	Video Spectral Comparator (VSC)	An optical ink comparison of the paper of the four pages of the will was conducted. Differences in the shade of white and the luminescence properties were observed between the first page and the remaining three pages, indicating that a different paper stock was used for the first page of the will.
	ESDA	The four pages of the will were examined for indentations using oblique light and ESDA. Indentations originating from the signatures within the will were detected on the last three pages of the will, indicating these pages were in contact with each other at the time of signing. However, no indentations were detected on the first page. No other indentations were detected on the pages of the will.
N8ERHR	Indented Writing	Oblique light: I find strong indented impressions from the signature on page 3 indented onto page 4. I find no other visible indented impressions using oblique light.
	ESDA	I find impressions of the two signatures from page 4 indented onto page 2 and less strongly onto page 3. I find impressions of the signature from page 3 indented onto page 4 strongly and less strongly onto page 2. The indentations of signatures on pages 2, 3 and 4 overlay the originals when the paper edges are in near alignment although this is not exact. There appears to have been slight movement of the paper between writing events based on the position of the indentations. However, this movement of the paper appears to be rotational around the top left hand corner rather than a sideways or up or down movement. I find no indentations of signatures on page 1. The relative strengths of the indented impressions suggest that another sheet of paper (not page 1) was interleaved both when the signatures on page 4 were written resting on pages 2 and 3 and when the signature on page 3 was written resting on pages 4 and 2.

TABLE 2

WebCode	Methods/Techniques	Observations
	Macroscopic/Microscopic Examination	Staple: On receipt the current page 1 was stapled to pages 2-4 via a staple in the top left hand corner. I removed this staple. I found that whilst there was only one pair of staple holes on page 1 there were two pairs of staple holes present in corresponding positions on pages 2-4. In my opinion this indicates that pages 2-4 were at one stage stapled together in a different stapling event. Additionally a fold mark at a corresponding angle can be seen on pages 2-4 near the staple holes. This is visible with oblique light and under ESDA. This fold could correspond to moving the pages when they were stapled. No such fold is visible on page 1.
	Ultraviolet Light	Paper: Under UV 254nm I find that page 1 differs slightly in its luminescent properties compared to pages 2-4 whereas pages 2-4 are similar under these conditions.
	Video Spectral Comparator (VSC)	Paper: I find that under infrared luminescence the paper of page 1 shows a slightly different appearance to the paper of pages 2-4. Fine threadlike fibres are visible under magnification on page 1 whereas for pages 2-4 the appearance is more mottled. Using transmitted light I find that look through appearance of page 1 is more yellow than the equivalent appearance of pages 2-4.
	Macroscopic/Microscopic Examination	I find that the height and width dimensions of pages 1-4 are not significantly different. During examinations I did not have access to a micrometer or suitable scales and so was unable to compare the thickness or mass of the pages.
	Overlays	I find that the line "The names of my children are Cody Olson, Jasmine Olson, Kyle Olson, Jenna Olson, and Bradley Olson. All" on page 1 is in a similar typestyle to the surrounding body text on this and the other pages but is in a slightly larger font size. Additionally I find that this line extends well past the right hand margin which governs the rest of the text on this page and also the other three pages of the document. This is particularly noticeable when compared to the main block of text on page 4 which is in justified text alignment. This and the signature lines cut off at approximately the same horizontal position as the last digit in the page numbering in the footer of the document. Therefore, in my opinion, a significantly different editing regime has been applied to the line "The names of my children...All" when compared to that used on the remainder of the document. I also note that there is a larger space than elsewhere between the end of the two lines in Article I and before Article II.
	Macroscopic/Microscopic Examination	I find that there are a number of black marks on the top edge of page 1 near the staple holes in the left hand corner. These marks appear as relatively regularly spaced small diagonal markings. Although other possibilities exist I consider that they could be caused by the application of a mechanical device such as a clamping or holding tool.
	Macroscopic/Microscopic Examination	I note various minor formatting inconsistencies within the document. These include a mix of curly quotes and straight quotes sometimes in the same word. I also note that on page 1 under Article III the first bolded words "Residuary Estate" are not preceeded with an "A." whereas elsewhere all bolded initial text start with an "A.", "B." or "C.". Additionally the subclauses in Article III on page 1 do not start with "(a)", "(b)" or "(c)".
	Overlays	I find that the position of the page numbering on page 1 is approximately 1 mm further from the bottom edge of the page than the corresponding page numbers are on pages 2-4.

TABLE 2

WebCode	Methods/Techniques	Observations
N9ABJU	Visual Examination	Questioned document consists of 4 sheets of paper, printed on one side in black. Paper is white, with no special characteristics (watermark etc), all sheets are visually the same. Sheets are stapled together in the upper left corner. Paper is folded in this corner next to the staple. Indented impression from staple is visible, but none of the four sheets shows any traces of previous stapling or unstapling. We checked the paper size by laying all 4 sheets on the top of each other and the size of all 4 is the same. We compared font and alignment in all 4 pages. There are no differences in font. Quotation marks are mixed on all 4 pages (no pattern). Article 1 line of text (on the page 1) is longer than others. Alignment on page 4 is different than on other pages (it's aligned on both sides).
	Microscopic Examination	Text is printed with black toner. On the sheet 3 there is handwritten signature written with black ballpoint pen. On the sheet 4 there are two handwritten signatures, one is written with blue and the other with black ballpoint pen.
	Ultraviolet Light	No significant characteristics were observed in 365 nm, but in 254 nm there is slight difference in the paper fluorescence of the sheet no. 1 comparing to the sheets 2, 3 and 4.
	Transmitted Light	No significant characteristics were observed.
	Oblique Light	Indented impression can be seen on sheet 4. This is impression of the signature on the sheet no. 3.
	VSC - IR luminescence	Paper of the sheet 1 shows different luminescence than paper of the sheets 2, 3 and 4.
	Indented Writing	There are no indented impressions of the signatures from the page 4 on the page 1, strong on the page 2, weak on the page 3. There are strong indented impressions of the signature from the page 3 on the page 4, non on the page 1 and very weak on the page 2. Orientation of the indented impressions show that sheets were not stapled while being signed. Appearance and strength of indented impressions show that while signing sheet 4 it was on the top of sheet 2 and 3 was under both. Sheet 1 shows no signs of these two signatures. It also shows that while signing sheet 3 it was on the top of sheet 4 and 2 was under both. Sheet 1 shows no signs of this signature.
	Visualisation of magnetic properties of the toner	Toner on all 4 sheets shows visually same magnetic properties.
NALAE3	Macroscopic/Microscopic Examination	All pages made with black toner. Extra/vacant stapler holes in the upper left corner on pages 2, 3 and 4. On page 1 no extra/vacant stapler holes observed.
	ESDA	Page 1: no significant indented impressions. Page 2: indented impressions matching with signatures made on pages 3 and 4. Page 3: indented impressions matching with signatures made on page 4. Page 4: indented impressions matching with signatures made on page 3.
NE2KR7	Visual Examination	An extra set of staple holes was found on each of the sheets of paper of pages 2-4; the sets of extra staple holes were found to align with one another when examined under transmitted light illumination. No extra set of staple holes was found on the sheet of paper of page 1. A fold mark was found on each of the sheets of paper of pages 2-4 near the staple position. No fold was found on the sheet of paper of page 1.
	Video Spectral Comparator (VSC)	The optical properties (under spot light) of the sheet of paper of page 1 were found to differ from those of the sheets of paper of pages 2-4.

TABLE 2

WebCode	Methods/Techniques	Observations
	ESDA	Page 4 and page 2 each bore the indented mark of Stanley Olson's signature on page 3; page 2 and page 3 each bore the indented marks of the witnesses' signatures on page 4. No indented mark of any signature was found on page 1.
NEG2NK	ESDA	Imprints of writing in consistent on subsequent pages.
	Staples	Variations in staple holes among the pages.
	Macroscopic Examination	Odd arrangements of text/font
NHGCHY	ESDA	Signatures from pages 3 and 4 are not visible on page 1 but page 2.
	Microscopic Examination	Page 2-4 have additional staple marks. Not corresponding with page 1.
	Transmitted Light	Page 1 shows less line structure than page 2-4
	Ultraviolet Light	Page 1 shows a more homogenous UV-reaction of the paper than page 2-4
	Paper examination	no significant differences between the individual papers: - LAB-spectrophotometer - Weight - Thickness - Size - Grain direction
	machine writing	no significant differences between the machine writing of the individual pages: - Font - Magnetizability - Layout - Deposition patterns
NJWC2N	ESDA	Page 1 front: indentations of roller marks Page 1 back: indentations of roller marks Page 2 front: indentations of roller marks and of signatures on pages 3 and 4 Page 2 back: indentations of roller marks Page 3 front: indentations of roller marks and of signatures on page 4 Page 3 back: indentations of roller marks Page 4 front: indentations of roller marks and the signature on page 3 Page 4 back: indentations of roller marks
	Visual Examination	Page 1 contains one set of staple holes; however, pages 2 - 4 contain two sets of staple holes. No watermarks found
	Video Spectral Comparator (VSC)	Examined the four pages of the will using U.V. The paper could not be differentiated. Examined the staple holes using the VSC. The font and printer application were examined using the VSC and a SmartRule. The font style and toner application appeared to be consistent on all four pages. The font size also appears to be consistent throughout all four pages.
	Visual Examination	The first line under Article I on page 1 appears to be odd compared to the remaining pages. The justification and/or margin appears different. There also appears to be a larger amount of white space between the end of the paragraph of Article I and the beginning of Article II.
NV2PWU	Transmitted Light	1. Print Alignment Inspection via Transmitted Light - Examination of the "Page n of 4" notation under transmitted light revealed that the print alignment on "Page 1 of 4" deviates from the alignment observed on "Pages 2 to 4 of 4".
	Oblique Light	1. Verification of Perforations via Oblique Light - Physical examination of the perforations on pages 1 through 4 using oblique illumination showed that while pages 2 through 4 feature a total of four perforations, page 1 features only two.

TABLE 2

WebCode	Methods/Techniques	Observations
	Infrared Light	1. Paper Substrate Comparison via Infrared Luminescence (IRL) - Spectral analysis of the paper substrate on pages 1 through 4—conducted using an excitation wavelength band of 490–555 nm and a 610 nm longpass barrier filter—revealed that while pages 2 through 4 exhibited strong infrared luminescence, page 1 showed no luminescence emission, confirming a clear difference in the paper material.
NZF7RD	Visual Examination	Method of analysis for document alterations Non-destructive paper analysis method Simple observation techniques
	Microscopic Examination	Instrumented observation technique: Stereoscopic microscope. Digital microscope
	Video Spectral Comparator (VSC)	Instrumented observation technique: Spectral comparator video with general and white light sources using optical and digital magnification, IR filter array at 715 nm, transmitted light sources, ultraviolet (365 nm).
P2PU4P	Visual Examination	(1). Pages 1, 2, 3 and 4 have a similar paper size and colour. (2). Pages 1 to 3 have an aligned left margin and unaligned right margin. (3). Page 4 has aligned left and right margins. (4). Before the removal of the staple, no fold line in the paper was observed at the top left of page 1 and a fold line in the paper near the staple was observed on the reverse of page 4. (5). After the removal of the staple, a fold line in the paper near the staple was observed in the paper at the top left of pages 2, 3 and 4.
	Microscopic Examination	1). Tiny black dots were observed in all the printed texts in pages 1 to 4 and they are also distributed over the papers. The text printed were produced using a similar printing process.
	Video Spectral Comparator (VSC)	(1). Under high magnification (using flood and oblique lights), before the removal of the staple, no holes observed around the staple area on page 1 and there are 4 holes observed around the staple area on the reverse of page 4. After the removal of the staple, there are two additional holes observed around the staple area on pages 2, 3 and 4 which are of similar position and orientation across the three pages. (2). Under high magnification (using oblique light), after the removal of the staple, there is a fold line in the paper at the top left of the front side of pages 2, 3 and 4, and they are of similar position and orientation across the three pages. There is variation in the degree of the fold. The fold on page 4 is more distinct than those on pages 2 and 3. (3). Under ultraviolet lights 254nm, 312nm and 365nm, pages 1 to 4 showed that they all have a similar reaction. (4). Under high magnification (using flood light), the texts printed on pages 1 to 4 were produced using a similar font style, size and spacing. Overlaying the paragraphs showed that they have a similar line spacing. (5). Using oblique lighting, no indented impressions were observed on both sides of pages 1 to 3 and an indented impression was observed at the bottom of both sides of page 4.

TABLE 2

WebCode	Methods/Techniques	Observations
	ESDA	(1). No indented impressions were detected on both sides of page 1. (2). Indented impressions were observed on the front side of page 2 which two impressions corresponded to the two witnesses' signatures on page 4 and the impression at the bottom corresponded to the testator's signature on page 3. Undecipherable indented impressions were observed at the top of the reverse of page 2 and they did not correspond to any of the writings on pages 3 and 4. (3). Indented impressions were observed on the front side of page 3 which corresponded to the two witnesses' signatures on page 4. Undecipherable indented impressions were observed at the top of the reverse of page 3 and they did not correspond to any writings on page 4. An indented impression was observed at the bottom of the reverse of page 3 which corresponded to the testator's signature on page 3. (4). An indented impression was observed at the bottom of the front side of the page 4 which corresponded to the testator's signature on page 3. Some indented impressions were observed at the bottom of the reverse of page 4 which probably corresponded to the testator's signature on page 3.
P67Y3K	ESDA	Lack of indented writing on page 1, while indented writing on pages 2 through 4 was observed and attributed to pages 3 and/or 4 Indented writing examinations were conducted using side-lighting and electrostatic detection.
	Video Spectral Comparator (VSC)	Spot Fluorescence - page 1 is optically darker than pages 2 through 4
	Visual Examination	More than one set of staple holes on pages 2 through 4, while only one set of staple holes present on page 1; various formatting inconsistencies on page 1 of 4, including: font discrepancy, difference in alignment of text along the edge of the right margin of Article I and II paragraphs, misalignment of the position of the pagination.
P96DNN	Visual Examination	Visual examination of documents. Noted that there were additional staple holes on the back of page 4 of 4. Exam between the pages regarding the alignment and positioning of the text in the pages of the QD.
	Staple hole examination	Carefully removed staple from questioned document. Noted were one set of staple holes on Page 1 of 4, and two sets of staple holes on Pages 2, 3, and 4 of 4.
	Ultraviolet Light	UV light exam did not show anything remarkable.
PAZWPP	Ultraviolet Light	Document No. 1 (last will) consists of four A4 pages. Under ultraviolet light inspection, it was found that the fluorescence reaction of PAGE1 paper is different from that of PAGE2, PAGE3, and PAGE4 papers, indicating that PAGE1 paper does not come from the same source as PAGE2, PAGE3, and PAGE4 papers.
	Transmitted Light	Upon examination using transmitted light, inconsistencies were observed in the corresponding positions at the bottom right corner between Page 1 and Pages 2, 3, and 4. Therefore, it is concluded that Page 1 does not originate from the same source as Pages 2, 3, and 4.
	Visual Examination	Upon removal of the staple in the upper left corner of the document, it was observed that Page 1 exhibited only a single staple hole, whereas Pages 2, 3, and 4 each displayed two staple holes. This indicates that Pages 2, 3, and 4 were bound twice, while Page 1 was bound only once. Therefore, it is concluded that Page 1 does not originate from the same source as Pages 2, 3, and 4.

TABLE 2

WebCode	Methods/Techniques	Observations
PJ3D2T	Transmitted Light	1. Print Alignment Inspection via Transmitted Light - Examination of the "Page n of 4" notation under transmitted light revealed that the print alignment on "Page 1 of 4" deviates from the alignment observed on "Pages 2 to 4 of 4".
	Oblique Light	1. Verification of Perforations via Oblique Light - Physical examination of the perforations on pages 1 through 4 using oblique illumination showed that while pages 2 through 4 feature a total of four perforations, page 1 features only two.
	Infrared Light	1. Paper Substrate Comparison via Infrared Luminescence (IRL) - Spectral analysis of the paper substrate on pages 1 through 4—conducted using an excitation wavelength band of 490–555 nm and a 610 nm longpass barrier filter—revealed that while pages 2 through 4 exhibited strong infrared luminescence, page 1 showed no luminescence emission, confirming a clear difference in the paper material.
PK3E3D	ESDA	Pages 2, 3 and 4 have indentations while page 1 does not have indentations. Page 2 has 3 indented signatures. Page 3 has 2 indented signatures. Page 4 has 1 indented signature.
	Magnification	Page 1 has 1 staple hole. Page 2, 3 and 4 have 2 staple holes.
	Spot illumination	The paper used for page 1 is different from the paper used for pages 2, 3 and 4.
PN2RLW	Visual Examination	3. Visual and microscopic examination as well as instrumental analysis and comparison of the four pages of the questioned document disclosed the following: a. Page Q1.1 exhibits different spacing between Article I and Article II paragraphs when compared to the spacing between paragraphs on pages Q1.2 through Q1.4. b. Page Q1.1 exhibits a different shade of white color in comparison to pages Q1.2 through Q1.4. c. Page Q1.1 exhibits only one set of staple holes in comparison to pages Q1.2 through Q1.4, which exhibit two sets of staple holes, indicating that pages Q1.2 to Q1.4 were re-stapled. d. Examination of Q1 questioned document revealed that pages Q1.2, Q1.3, and Q1.4 share common indented impressions of the original signatures from pages Q1.3 and Q1.4, thus indicating that the pages were bound and/or stacked during signing. However, while the signatures from pages Q1.3 and Q1.4 produced indented impressions on subsequent and underlying pages, no such impressions were detected on page Q1.1, indicating that page Q1.1 was not part of the document-stack at the time of signing (see comparison chart on page 3).

TABLE 2

WebCode	Methods/Techniques	Observations
	Microscopic Examination	3. Visual and microscopic examination as well as instrumental analysis and comparison of the four pages of the questioned document disclosed the following: a. Page Q1.1 exhibits different spacing between Article I and Article II paragraphs when compared to the spacing between paragraphs on pages Q1.2 through Q1.4. b. Page Q1.1 exhibits a different shade of white color in comparison to pages Q1.2 through Q1.4. c. Page Q1.1 exhibits only one set of staple holes in comparison to pages Q1.2 through Q1.4, which exhibit two sets of staple holes, indicating that pages Q1.2 to Q1.4 were re-stapled. d. Examination of Q1 questioned document revealed that pages Q1.2, Q1.3, and Q1.4 share common indented impressions of the original signatures from pages Q1.3 and Q1.4, thus indicating that the pages were bound and/or stacked during signing. However, while the signatures from pages Q1.3 and Q1.4 produced indented impressions on subsequent and underlying pages, no such impressions were detected on page Q1.1, indicating that page Q1.1 was not part of the document-stack at the time of signing (see comparison chart on page 3).
	ESDA	1. Laboratory item #1, Invoice #Q201485, pages 1 through 4, designated Q1.1 through Q1.4 respectively, were examined utilizing oblique/side lighting and EDD (Electrostatic Detection Device) for the possible presence of indented impressions. Aside from the laboratory number, lab item number, envelope outline, paper outline, or extraneous markings - no impressions were found. However, impressions were found that have originated from the original questioned documents (see page 3 of this report for interpretation).
	Video Spectral Comparator (VSC)	2. Utilizing the VSC (Video Spectral Comparator) did not reveal exclusionary differences between the four pages Q1.1 through Q1.4 with respect to their responses to alternate light sources; however, microscopic examination under the floodlight revealed that page Q1.1 exhibits a different shade of white color in comparison to pages Q1.2 through Q1.4.
	Digital imaging	3. Evidence was photographed during analysis.
	Oblique illumination	3. Visual and microscopic examination as well as instrumental analysis and comparison of the four pages of the questioned document disclosed the following: a. Page Q1.1 exhibits different spacing between Article I and Article II paragraphs when compared to the spacing between paragraphs on pages Q1.2 through Q1.4. b. Page Q1.1 exhibits a different shade of white color in comparison to pages Q1.2 through Q1.4. c. Page Q1.1 exhibits only one set of staple holes in comparison to pages Q1.2 through Q1.4, which exhibit two sets of staple holes, indicating that pages Q1.2 to Q1.4 were re-stapled. d. Examination of Q1 questioned document revealed that pages Q1.2, Q1.3, and Q1.4 share common indented impressions of the original signatures from pages Q1.3 and Q1.4, thus indicating that the pages were bound and/or stacked during signing. However, while the signatures from pages Q1.3 and Q1.4 produced indented impressions on subsequent and underlying pages, no such impressions were detected on page Q1.1, indicating that page Q1.1 was not part of the document-stack at the time of signing (see comparison chart on page 3).
PNHNEW	Visual Examination	Visual examinations of Exhibits Q1(1)(a and b) through Q1(4)(a and b) were conducted.

TABLE 2

WebCode	Methods/Techniques	Observations
	Microscopic Examination	Microscopic examinations of Exhibits Q1(1)(a and b) through Q1(4)(a and b) were conducted. The questioned paper within Exhibit Q1(1)(a and b) was compared with the questioned paper within Exhibits Q1(2)(a and b) through Q1(4)(a and b). The questioned machine-generated entries on Exhibits Q1(1)a, Q1(2)a, Q1(3)a and Q1(4)a were prepared using toner printing technology. The questioned machine-generated entries on Exhibit Q1(1)a were compared to Exhibits Q1(2)a, Q1(3)a and Q1(4)a. The questioned machine-generated entries on Exhibits Q1(1)a were prepared by the same printer/printing technology on Exhibits Q1(2)a, Q1(3)a and Q1(4)a. No font differences were observed within the questioned machine-generated entries on Exhibits Q1(1)a, Q1(2)a, Q1(3)a and Q1(4)a. The questioned Stanley Olson signature on Exhibit Q1(3)a was prepared using black non-ballpoint ink. The questioned Andrea House signature on Exhibit Q1(4)a was prepared using blue ballpoint ink. The questioned Chance Steele signature on Exhibit Q1(4)a was prepared using black ballpoint ink. The questioned Stanley Olson signature on Exhibit Q1(3)a, and questioned Andrea House and Chance Steele signatures on Exhibit Q1(4)a are suitable for comparison with submitted known signatures.
	Video Spectral Comparator (VSC)	Differences in the properties (i.e., optical or spectral characteristics) of the paper, and the amount and placement of the staple holes within the paper of Exhibit Q1(1)(a and b) were observed. The questioned paper within Exhibit Q1(1)(a and b) does not originate or share a common source with the questioned paper within Exhibits Q1(2)(a and b) through Q1(4)(a and b). The questioned paper within Exhibit Q1(2)(a and b) originated from or shares a common source with the questioned paper within Exhibits Q1(3)(a and b) and Q1(4)(a and b); however, it should be noted that paper of this type is manufactured in mass quantity and is available to the average consumer. Additionally, a similar amount and placement of the staple holes were observed within the paper of Exhibits Q1(2)(a and b), Q1(3)(a and b) and Q1(4)(a and b). Ink differences were observed between the inks on Exhibits Q1(3)a and Q1(4)a, and within the inks on Exhibit Q1(4)a.
	Indented Writing	Electrostatic Detection Apparatus (ESDA) examination of Exhibits Q1(1)(a and b) through Q1(4)(a and b) was conducted. Indented handwriting and machine-created impressions were observed on Exhibits Q1(2)(a and b), Q1(3)(a and b) and Q1(4)(a and b); however, the handwriting impressions on Exhibits Q1(2)b, Q1(3)b and Q1(4)b are not of evidentiary value. Indented machine-created impressions were observed on Exhibit Q1(1)(a and b); no further indented impressions were observed. Indentation lifts were created to preserve the results of the ESDA examination.
	Digital preservation/processing	The ESDA indentation lifts were digitally preserved and processed. Exhibit Q1 was digitally preserved.

TABLE 2

WebCode	Methods/Techniques	Observations
Q66LVH	Visual Examination	Upon visual inspection, it was determined that the document exhibits material inconsistencies between its pages. In particular, the first page shows discrepancies compared to the other three regarding the number of holes corresponding to the document's stitching: the first page has only two holes, indicating that it was stitched only once; while the other three pages have more than four holes, demonstrating that they were stitched multiple times. Additionally, the right margin of the first page differs from that of the others, a circumstance that is especially evident in the heading of Article 1, where the text extends significantly toward that margin. Similarly, differences are observed in the line spacing of the titles between the first page and the remaining pages. Consequently, these findings suggest the existence of a substitutionary alteration to the first page of the document, which appears to have been added to replace the original page, which had been previously removed.
	Video Spectral Comparator (VSC)	Upon inspecting the questioned document with the aid of video comparison, it was determined that it presents material inconsistencies between its pages. In particular, the first page shows discrepancies compared to the other three regarding the number of holes corresponding to the document's stitching: the first page has only two holes, indicating that it was stitched only once; while the other three pages have more than four holes, which demonstrates that they have been stitched on several occasions. Additionally, the right margin of the first page differs from that of the others, a circumstance that is especially evident in the heading of Article 1, where the text extends significantly toward that margin. Similarly, differences are observed in the line spacing of the titles between the first page and the remaining pages. Consequently, these findings allow us to establish the existence of a substitutionary alteration on the first page of the document, which would have been added to replace the original page, which had been previously removed.
QWAJQK	Video Spectral Comparator (VSC)	Foster VSC9000 video spectral comparator + Freeman Equipment that allows, through the different illuminations and wavelengths, to observe alterations, chromatic tones of the substrate and differential physical behaviors of the inks used in the filling out of the document in question: it also allows images of what was observed to be obtained
	Microscopic Examination	Nikon SMZ1500 stereo microscope with digital camera. It allows the detailed observation of the physical characteristics of the document, for the present case the identifying aspects that indicate whether or not an alteration was presented
	Magnification	Portable magnifiers. Allows to evidence details of the documents
R7QRQY	Visual Examination	The stapled corner of Q1d (back side) has a fold and additional staple holes from a staple that was removed prior to submission for examination. The stapled corner of Q1a (front side) has no additional staple holes and has not been folded. Q1 was generated with a black toner printing process. The Q1 signatures are original ink signatures. Margins: The left margins of Q1 measure approximately 1 1/16" to 1 1/8". The right margins of Q1 measure approximately 1 1/8" or larger, with the exception of the Identification of Family section in Q1a that measures approximately 3/4".

TABLE 2

WebCode	Methods/Techniques	Observations
	Video Spectral Comparator (VSC)	Q1b, Q1c, and Q1d have two sets of staple holes. Q1a has one set of staple holes. Q1b, Q1c, and Q1d have a fold in the corner near the staple/staple holes. Q1a does not have a fold in the corner near the staple/staple holes. Pages Q1a, Q1b, Q1c, and Q1d reacted similarly under various wavelengths of infrared (IR) and ultra violet (UV) radiation. No watermarks were observed on Q1a, Q1b, Q1c, or Q1d when examined with transmitted light.
	ESDA	No indented impressions of evidentiary value were developed on Q1a. Indented impressions from the signatures on Q1c and Q1d were developed on Q1b. Indented impressions from the signatures on Q1d were developed on Q1c. Indented impressions from the signature on Q1c were developed on Q1d.
RB7XQE	Visual Examination	Visual examination revealed irregular margins without justification on pages 1, 2, and 3, unlike page 4, which is properly aligned. The information on page 1 shows a contradiction between the names at the beginning of the page and the names in the inheritance division section.
	Microscopic Examination	Using a close-up view with a trinocular microscope, a similarity in the type of printing was observed, ruling out the use of a blank document with a signature. Using illumination in the visual spectrum, including oblique, transmitted, and episcopic beams, specifically in the upper left area where the mechanical staple perforations are located, irregularities and inconsistencies were detected, specifically a lack of coordination in the number of perforations between page 1 and pages 2, 3, and 4.
	ESDA	Analysis was performed with a groove developer, but no abnormalities were found.
RDAT9W	Visual/Microscopic	The 1A-1D questioned sheets of paper were produced with an office machine system utilizing black toner. An examination of the fonts used to produce the machine printing on documents 1A-1D was conducted visually, microscopically and digitally. The documents were found to contain a serif font with no overt discrepancies observed within or between the documents. An alignment grid (horizontal/vertical spacing) was created in Adobe Photoshop 2026 for the Items 1A-1D documents. No overt alignment discrepancies were observed. The 4-page questioned document (1A-1D) was submitted to the laboratory stapled together with a single staple binding the documents. However, the 2nd, 3rd and 4th pages (1B, 1C and 1D) were also observed to contain a second set of staple holes that overlaid precisely with each other. This second set of staple holes was not observed in the 1st page, Item 1A, which only contained the original staple/staple holes.
	Video Spectral Comparator (VSC)	The 1A-1D questioned sheets of paper were examined with no visible watermarks observed. The four sheets of paper exhibit similar class characteristics, such as size, color, and response to ultraviolet and infrared light sources indicating they may share a common source.
	ESDA	1A: There were no impressions recovered in Item 1A. 1B: There were impressions recovered in the front of Item 1B, sourced to the original writing (signatures) on Items 1C and 1D. 1C: There were impressions recovered in the front of Item 1C, sourced to the original writing (signatures) on Item 1D. 1D: There were impressions recovered in the front of Item 1D, sourced to the original writing (signature) on Item 1C. There were no other meaningful impressions located in the remaining questioned documents.

TABLE 2

WebCode	Methods/Techniques	Observations
RZ4ZGK	Transmitted Light	-The staple hole characteristics on page 1 differ from those observed on pages 2 through 4. -The text alignment of page 1 is not consistent with pages 2 through 4.
	ESDA	-No indented impressions were developed on page 1. -Indented impressions were developed on pages 2 through 4 that correspond to the signatures appearing on pages 3 and 4.
	Macroscopic Examination	The section numbering on page 1 differs from the corresponding or "like" sections appearing on pages 2 and 3.
RZNFU2	Visual Examination	It was analyzed in a general way with the senses. At first glance, it was observed that it consists of four sheets printed in black ink with signatures on sheet three, and on sheet four there are two signatures. It is stapled in the upper left part, and no anomaly is observed.
	DOCUCENTER NIRVIS PROJECTINA	The document was inserted individually, sheet by sheet, into the computer. It was observed that sheet one has two staple holes, while sheets two, three, and four have more staple holes. The study continued, and in the second paragraph of the first sheet, there is a line that exceeds the margin, which all the other sheets respect. It was also analyzed with the lights of the computer, in which nothing else was found.
	ESDA	The sheets were analyzed with the ESDA equipment, and it was observed that sheets number two and three present the writing grooves of the signatures that are imprinted on sheet number four, while on sheet one they are not present.
T8KT8A	ESDA	The indented impression of the signature on Q3 was detected on Q2 and Q4. No corresponding indented impression of Q3 signature was detected on Q1. The indented impressions of the two signatures on Q4 were detected on Q2 and Q3. No corresponding indented impression of two signatures on Q4 was detected on Q1.
	Video Spectral Comparator (VSC)	Q1 has two (02) staple holes, Q2 has four (04) staple holes, Q3 has six (06) staple holes and Q4 has eight (08) staple holes.
TB23HT	Visual Examination	Crease in top left hand corner of pages 2 to 4, is not visible in page 1. Pages 2 to 4 have 3 sets of staple holes, page 1 has one set.
	Microscopic Examination	Differences in the images of the level of blackness in the toner between page 1 (darker) and pages 3 to 4.
	Transmitted Light	With transmitted light, vertical lines can be seen in the look through image of the papers in pages 2 to 4 but not in page 1.
	Video Spectral Comparator (VSC)	With transmitted light in UV mode, vertical lines can be seen in the look through image of the papers in pages 2 to 4 but not in page 1.
	ESDA	Indented writing indicates pages 3 and 4 were signed when on top of the other pages but indentations of the signatures were found on pages 2 to 4 but not on page 1.
UANNQD	ESDA	No indentations were observed on Page one (1) of the will.
	ESDA	indentations were observed on Page two (2), three (3) and four (4) of the will.
	Video Spectral Comparator (VSC)	Magnification and flood/white light: Page 1 has one (1) pair of staple holes were as Page two (2), three (3) and four (4) of the will has multiple pairs of staple holes.
UMDP8J	Microscopic Examination	A microscope was utilized to examine and magnify the stapling points across all pages of the will

TABLE 2

WebCode	Methods/Techniques	Observations
	Video Spectral Comparator (VSC)	"It is utilized in contemporary forensic examinations using standard lighting, in addition to ultraviolet (UV) and infrared (IR) radiation. It is applied in imaging techniques to analyze and compare the structure of letters, stroke characteristics, margins, and printing inks.
	FORAM WITH COMPUTER RAMAN SPECTROMETER	This device was utilized to examine and analyze the printing inks and to conduct a comparative analysis across all pages of the will
	Magnification	We use Different magnification lenses were utilized to examine the will in order to determine whether the typeface is consistent across all pages and to evaluate the extent of uniformity in font size throughout the document
UU9R9V	Macroscopic Examination	Presence of an additional pair of staple holes on the upper left corner of pages 2, 3 and 4. Presence of a diagonal fold n the upper left corner of pages 2, 3 and 4. Absence of these caracterics on page 1
	Macroscopic/Microscopic Examination	Heavier toner cover for impressions on page 1
	Overlays	Slight missalignment of text on page 1 when overlaid with pages 2, 3 or 4
	ESDA	
UUCCWY	ESDA	Indentation examination completed on front & back of page 1 to page 4, Q1. Q1.1 front: nil indentations. Q1.1 back: nil indentations. Q1.2 front: indentations sourced to signature on page 3 & signatures on page 4. Q1.2 back: indentations sourced to signature on page 3 & signatures on page 4. Q1.3 front: indentations sourced to signatures on page 4. Q1.3 back: indentation sourced to signature on page 3. Q1.4 front: indentation sourced to signature on page 3. Q1.4 back: indentations sourced to signatures on page 4 & signature on page 3.
	Video Spectral Comparator (VSC)	All 4 pages of Q1 exhibited the same characteristics under ultraviolet light. inconsistencies were observed between the staple holes in the top left corner of each page. page 1 contained 1 set of staple holes. pages 2, 3, & 4 all contained 2 sets of staple holes, indicating they had been stapled more than once.
V63KWC	Overlays	The document was examined using instruments and equipment with a wide field of view, and the following was determined: On the first page, the first line of Article I is not right-justified (it extends beyond the other text in the document). On the first page, only two staple holes are visible, while on pages 2, 3, and 4, four or more holes are observed. The spacing between the last line of each paragraph preceding the text "Article I, Article II, and Article III" is greater than the spacing observed in the paragraphs on pages 2 and 3. The page numbering on page 1 of 4 is not consistent with that on pages 2, 3, and 4.
V7JGMQ	Visual Examination	Color of page 1 slightly different (Opaque) with visual exam under normal light. The right indentation on page 1 of the first line of Article I ("and Bradley Olsen. All") is set further to the right in comparison to the other pages. The footer ("Page 1 of 4") is slight lower in comparison to the other pages.
	Transmitted Light	there is an additional set of staple holes on page 2,3, and 4 that are not on page one.
	Video Spectral Comparator (VSC)	Examined with ultraviolet at 365nm, 312nm. and 254nm. There was no different reactions. Examined with spot fluoresce and there was a notable difference between page 1 and Pages 2,3, and 4.

TABLE 2

WebCode	Methods/Techniques	Observations
	ESDA	Page 1 was negative with no visible indentations. Page 2 was positive, sourced to the witness signatures from page 4 and a portion of the Testator signature source to page 3. Page 3 was positive, sourced to the witness signatures from page 4. Page 4 was positive, sourced to the Testator signature source to page 3.
VA2YJ3	Microscopic Examination	Submitted questioned Will consisted of four pages stapled together. Printed text is toner technology with consistent font on all pages. Except for page one, pages two, three, and four have consistent creased fold marks below staple holes. Staple holes for pages two, three, and four are consistent with each other. Page one contains a smaller set of staple holes compared with pages two, three, and four.
	Video Spectral Comparator (VSC)	Side lighting revealed visible indented Testator's signature on page four. Paper tested optically with UV light and no differences observed between the four pages of paper at this level of analysis.
	ESDA	ESDA testing of all pages of the questioned Will revealed indented Witness Signatures on pages two and three. Page one of the question Will did not contain any indented signatures. The Testator's signature on page three is indented on page four.
VAJQV8	ESDA	Indented signatures appeared on pages that were below the signed pages (pages 2-4) page 1 did not have any indentations.
	Magnification	staple marks on pages 2 to 4 were more than one set when compared to page one which only had one set of staple marks. which indicates that the document was altered.
	Transmitted Light	the extra set of staple holes is visible
VBE9W9	Ultraviolet Light	Paper fluorescence under UV light: Page 1 fluoresces brightly under UV light. Pages 2, 3 & 4 fluoresce with the same intensity but not as bright as Page 1 when placed side by side under UV light.
	Transmitted Light	Staple Holes: Pages 2, 3 & 4 have multiple staple holes and folds whereas page 1, has a few staple holes. The folds on page 2, 3 & 4 have a solid crease and the fold on page 1 has no crease.
	Microscopic Examination	Paper Edges: Page 1 has rough edges and pages 2, 3 & 4 have smoother edges. Similar paper fiber composition was observed in Pages 2, 3 & 4 and Page 1 has a different paper fiber formation.
VZT8EE	Indented Writing	Page 1 of Item 1 (Q1) did not contain indentations of any signature, while indented writing on pages 2 through 4 was observed and attributed to signatures on page 3 and/or page 4.
	Visual Examination	- Page 1 of Item 1 (Q1) did not contain double staple markings or a crease line, whereas pages 2 through 4 did. - The right-side margin of the page 1 Article 1 paragraph of Item 1 (Q1) extended past the right-side margin of the other pages.
W2JQV7	ESDA	- Indentations of page 4 signatures were not observed on page 1 suggesting that page 1 was not attached to page2, page 3 and page 4 during signing ceremony. - Indentations of page 4 signatures were observed on page 2and page 3 suggesting that page 2 to page 4 were attached during signing ceremony. - Indentations of page 3 signature was observed on page 4 suggesting that page 3 to page 4 were attached during signing ceremony.

TABLE 2

WebCode	Methods/Techniques	Observations
	Video Spectral Comparator (VSC)	- One set of staple holes were observed on page 1 indicating that page 1 was stapled once. - More than one set of staple holes were observed on page 2 to page 4 suggesting that original Will has been tampered with.
W2MAJ9	Visual Examination	By visually examining the papers, the orientation of fibers of page one is not as the orientation of fibers of pages 2,3 and 4. The orientation of fibers on the those pages are of vertical arrangement whereas the orientation of fibers of page 1 is largely not vertical.
	Infrared Light	Pages 2,3 and 4 show luminance whereas page 1 shows no luminance. The results of pages 2, 3 and 4 are similar to each other.
	ESDA	ESDA results were insignificant. No differences were observed.
	Ultraviolet Light	All pages showed similar response to UV of different wavelengths.
	Video Spectral Comparator (VSC)	IR, UV, magnification and reflectance.
WQMMPQ	ESDA	Indented impressions are found on pages 2, 3 and 4 that point out a same temporal signature action but none into page 1.
	Macroscopic Examination	Pages 2, 3, and 4 have four staple holes, which does not match the two staple holes on page 1. This means that pages 2, 3, and 4 were opened twice to change page 1. The font used for the printed numbers and characters is the same. This means that the same text file was used to generate the document.
	Magnetic reader	The magnetic reading of the toner printed on all pages of the document gives the same response, which means that the same printer was used to print it.
	Video Spectral Comparator (VSC)	When comparing the response of all pages of the questioned will under ultraviolet light, the same response is obtained, which means that the same paper was used. The same response also occurs when the paper is exposed to diascopic light.
	Precision scale	When measuring the weight of all the pages of the document, the same grammage is obtained, which means that the same paper was used.
WRWR3E	Video Spectral Comparator (VSC)	Image magnification (, superimposition, use of transmitted light.
	Magnification	Magnification of features, hook perforations in the upper left corner of the reverse side
WVGJEH	Magnification	
	Microscopic Examination	
	Transmitted Light	
XB4JHL	Microscopic Examination	Visual and microscopic examination was conducted on the 4 pages. Images of the staple holes were documented before and after removal. Pages 2-4 have multiple staple holes; page 1 has staple holes from current staple. Black only Toner present on Pages 1-4. Page 3- the signature was created with a black non-Ballpoint pen, page 4 (signature 1) was with a blue ballpoint pen and page 4 (signature 2) was created with a black ballpoint pen.

TABLE 2

WebCode	Methods/Techniques	Observations
	ESDA	Using the ESDA on all 4 pages: -No impressions developed on page 1. Page 2 had impressions from all 3 signatures. Page 3 had both witness signatures developed. Page 4 only had the signature from page 3. Page 1 should have had all 3 signatures but none were observed.
	Video Spectral Comparator (VSC)	UV 365 was used using the VSC, page 1 fluoresces differently than pages 2-4. IRL was used to show the difference in paper chemistry. Transmitted light was used to show the staple holes align on pages 2-4, page 1 did not have same staple holes.
	Visual Examination	
XGBZZM	Video Spectral Comparator (VSC)	Microscopic and macroscopic examination reveals a difference in the number of holes located in the upper left corner of the pages, with page 1 of 4 having fewer holes than the remaining pages (2 of 4, 3 of 4, and 4 of 4).
	Video Spectral Comparator (VSC)	Examination with left and right oblique lighting shows a double mark located in the upper left corner of pages 2 of 4, 3 of 4, and 4 of 4; however, it is not present on page 1 of 4.
	ESDA	The Examination with the Groove Revealing Equipment (Latent Writing Revealer) shows the grooves from the pressure of the signatures present on pages 2 of 4, 3 of 4 and 4 of 4, however, on page 1 of 4 it is not present.
XT9QYA	Oblique Light	Disputed Four page 'Last Will and Testament marked "Q1": page 1 of 4: is marked "Q1.1" page 2 of 4: is marked "Q1.2" page 3 of 4: is marked "Q1.3" page 4 of 4: is marked "Q1.4" After an examination I came to the following conclusions: 1.The writing on "Q1.1" is aligned to closer to the right margin as compared to the writing on "Q1.2", "Q1.3" and "Q1.4". 2.The page number on "Q1.1" is not aligned as the page numbers on "Q1.2", "Q1.3" and "Q1.4". 3.With regards to the staple holes, "Q1.1" has two, "Q1.2" has four, "Q1.3" has six and "Q1.4" has six with two holes bigger than the others.
	Infrared Light	Signatures on "Q1.3" and "Q1.4" disappear when observed under Infra-red light thus, indicates that the signatures are originals.
	ESDA	For indentation, "Q1.1" has no indentations, "Q1.2" has one indented signature that is legible from "Q1.4" and the other two signatures from "Q1.3" and "Q1.4" is illegible, "Q1.3" has one indented signature that is legible from "Q1.4" and the top signature is illegible and "Q1.4" has one indented signature from "Q1.3".
XW86KD	Microscopic Examination	Oblique lighting.
	Video Spectral Comparator (VSC)	Regular indoor lighting; Ultraviolet, Infrared and Transmitted lightings.
Y7N96H	Infrared Light	The examination of the questioned document under infrared illumination using the VSC8000 revealed a noticeable variation in luminescence response. Specifically, page number (1) exhibited a different infrared luminescence compared to pages (2), (3), and (4) when exposed to infrared radiation. This inconsistency indicates that page number (1) differs in composition or printing characteristics from the remaining pages, suggesting it was not produced under the same conditions or at the same time.

TABLE 2

WebCode	Methods/Techniques	Observations
	Magnification	Through detailed magnification analysis, discrepancies were observed in the physical impressions of staple pins across the document. Pages (2), (3), and (4) display multiple staple pin impressions, whereas page (1) contains only a single staple impression. This variation strongly suggests that pages (2), (3), and (4) were compiled and stapled together on more than one occasion, while page (1) was introduced later and attached separately, indicating possible substitution.
Y8YBRG	Visual Examination	1. All four-pages of the questioned Last Will and Testament (Item Q1: Four-page Last Will and Testament concerning decedent Stanley Olson) showed similar colour of paper and size (27.9 cm X 21.6 cm). 2. There is one handwritten entry which is signature observed on "Page 3 of 4" of the questioned Last Will and Testament (Item Q1). 3. There are two handwritten entries which are two signatures observed on "Page 4 of 4" of the questioned Last Will and Testament (Item Q1). 4. All handwritten entries were written using combination of black and blue ink. 5. The signatures entries on "Page 4 of 4" of questioned Last Will and Testament (Item Q1) were handwritten using blue ink pen for Andrea House and black ink pen for Chance Steele. 6. The signature entry on "Page 3 of 4" of questioned Last Will and Testament (Item Q1) were handwritten using black ink pen for Stanley Olson.
	Indented Writing	Using Electrostatic Detection Apparatus (ESDA) 2: 1. No Indented writing was deciphered on "Page 1 of 4" of the questioned Last Will and Testament (Item Q1). 2. Indented writing (3 signatures) was deciphered on "Page 2 of 4" of the questioned Last Will and Testament (Item Q1). 3. Indented writing (2 signatures) was deciphered on "Page 3 of 4" of the questioned Last Will and Testament (Item Q1). 4. Indented writing (1 signature) was deciphered on "Page 4 of 4" of the questioned Last Will and Testament (Item Q1). Using Video Spectral Comparator (VSC) 8000: 5. Indented handwriting deciphered using ESDA and the questioned Last Will and Testament (Item Q1) were overlapped as follows: i. The indented writing (3 signatures) deciphered on "Page 2 of 4" was overlapped with signatures on "Page 3 of 4" and "Page 4 of 4". These signatures were identical to each other respectively. ii. The indented writing (2 signatures) deciphered on "Page 3 of 4" was overlapped with signatures on "Page 4 of 4". These signatures were identical to each other respectively. iii. The indented writing (1 signature) deciphered on "Page 4 of 4" was overlapped with signatures on "Page 3 of 4". These signatures were identical to each other respectively. 6. Indented writing (1 signature) was observed on the "Page 4 of 4" the questioned Last Will and Testament (Item Q1) using side lighting. 7. No Indented writing was observed on the "Page 1 of 4", "Page 2 of 4" and "Page 3 of 4" the questioned Last Will and Testament (Item Q1) using side lighting. 8. Transparency was produced for "Page 3 of 4" and "Page 4 of 4" to overlap with Indented writing (3 signatures) deciphered on "Page 2 of 4", "Page 3 of 4" and "Page 4 of 4" and these signatures were identical to each other respectively.

TABLE 2

WebCode	Methods/Techniques	Observations
	Examination of Alteration using Video Spectral Comparator (VSC) 8000	1. All 4 pages of the questioned Last Will and Testament (Item Q1) showed similar appearances observed when exposed to 254nm ultra-violet light, 312nm ultra-violet light, 356nm ultra-violet light and fluorescence light. 2. Absence of a small staple hole on "Page 1 of 4" compared to staple holes on "Page 2 of 4", "Page 3 of 4" and "Page 4 of 4". The "Page 2 of 4", "Page 3 of 4" and "Page 4 of 4" were stapled twice whereas the "Page 1 of 4" was stapled once only. Thus, "Page 1 of 4" consistent with being replaced. 3. Spacing between the line, alignment, font type and font size are similar on all four pages of the questioned Last Will and Testament (Item Q1). 4. Upon magnification and overlapping word 'Olson', 'Will' and 'Page' between the "Page 1 of 4" with "Page 2 of 4", "Page 3 of 4" and "Page 4 of 4" as follows: a) 'Olson' : "Page 1 of 4" wider compared to other pages. b) 'Will' : Similar between all pages c) 'Page' : Similar between all pages 5. The word 'Olson' are similar width when compared with 'Olson' word in same "Page 1 of 4".
	Examination of Printing Process	1. The printing process of all four-pages of the questioned Last Will and Testament (Item Q1) showed similar images to those printed by electrophotographic printing process.
YKP62P	Oblique Light	Pages 2-4 have a strong crease in the top left corner by the staple. Page 1 does not.
	Video Spectral Comparator (VSC)	The paper of page 1 has different response to pages 2-4 under infrared luminescence.
	Transmitted Light	The paper of page 1 has a difference in colour and paper fibre distribution to pages 2-4.
	Macroscopic/Microscopic Examination	The text on all four pages is produced in toner. The text in line 1 of Article 1 (beginning "The names of...") is a larger font size than the rest of the document. It also has a smaller right margin than the rest of the text in the document. Page 1 is slightly misaligned relative to the other pages.
	ESDA	The Testator signature from page 3 is indented upon page 4 and page 2. The Witness signatures from page 4 are indented upon pages 2 and 3. None of the signatures are indented upon page 1.
YP6EET	Video Spectral Comparator (VSC)	Exam of the UV reaction of each page (365nm) and comparison of the print font, print alignment, print size and the typography of the toner print on all 4 pages. Exam found there are no disenable differences between the paper substrate or the print between pages 1-4 that would indicate alteration.
	Macroscopic/Microscopic Examination	Visible to the naked eye but more so under magnification, pages 2, 3 and 4 were each found to have an additional set of staple holes while page 1 does not.
	ESDA	An ESDA exam of all 4 pages revealed indentations of the signatures from pages 3 and 4 on pages 2, 3 & 4 indicating these pages were on top of each other when signed. However, no signature indentations were developed from page 1. I would expect to find signature indentations on page 1 also if the Will was not altered.
	ESDA	There are matching or highly similar striation patterns on the ESDA lifts of all 4 pages. These striation patterns appear to be caused by the printing process indicating all 4 pages of the Will were printed using the same printer. However, as it cannot be determined if the pages were printed at the same time or not, this finding neither supports nor disproves alteration.
	Thickness	All 4 pages of the Will were found to be very similar in thickness when measured using a micrometer.

TABLE 2

WebCode	Methods/Techniques	Observations
YR8DPL	Macroscopic/Microscopic Examination	The document is stapled with no other type of hole visible on the first sheet, while the back of the last sheet, in the same area, shows other holes which, due to their location, spacing, and degree of perforation, are related to the previous existence of another staple. Pages 2 and 3 – upon removing the staple – show in this area the same set of holes as on page 4, indicating a prior stapling on pages 2, 3, and 4 to which the document currently exhibits. Additionally, pages 2, 3, and 4 show diagonal fold marks of varying intensity near the area of the first punctures, which are not present on page 1. The text on the four pages is in a graphic box with a top margin of 30 mm, left and right of 28 mm, and bottom of 24 mm, approximately. On all pages, uniformity is maintained regarding the alignment of the titles of each section, font and style of lettering, as well as the footer. In the interior paragraphs of each section, uniformity is not maintained regarding text justification, as they are arranged to the left, towards the sides, and to the right, as well as variability in indents (to the left, to the right, and negative to the right) and with the inclusion of line breaks. These variations can occur – with word processors – by the person(s) creating a document before printing it, without intending to alter the document but rather to give it 'certain properties' of personalization. The document is printed using black toner granules identical for all 4 pages (laser printing), maintaining the same printing quality, with no evidence of using more than one printer or more than one graphic printing time on each page.
	Video Spectral Comparator (VSC)	In the spectral scanning carried out on the four pages of the document, no suppression, blocking, addition, transfer, or substitution of texts are evident.
YR8DR8	Indented Writing	Oblique light examinations and examinations utilizing the Electrostatic Detection Apparatus (ESDA) of the front and reverse sides of the four pages containing machine-printed text and three signatures revealed an indented impression corresponding to the Stanley Olson signature was produced on page 3 while page 3 was positioned over page 4 at the time the signature was executed. No additional indented impressions were detected.
	Ultraviolet Light	Examinations utilizing the ultraviolet (UV) light source within the Video Spectral Comparator (VSC) revealed that page 1 of the four-page questioned document exhibited a different fluorescent reaction than the remaining three pages, with page 1 fluorescing noticeably brighter under UV illumination.
	Macroscopic/Microscopic Examination	Examinations of the four-page questioned document revealed that page 1 contains a slightly larger left margin than pages 2 through 4. Examinations of the four-page questioned document further revealed that page 1 contains one staple and its corresponding pair of staple holes. Pages 2 through 4 contain the same staple and corresponding staple holes, along with an additional set of staple holes not containing a staple at the time of examination. Additionally, a small fold was observed in the upper left corner of pages 2 through 4 that was not present on page 1 of the questioned document. There may be formatting differences between page 1 and pages 2 through 4. However, at this time, no conclusion can be reached as to whether the paragraph bullet formatting is or is not different between page 1 and the remaining pages of the questioned document. Examinations and comparisons with a copy of the earlier version of the Will, if such a copy exists, would be necessary before more definitive conclusions could be rendered regarding the formatting. (No Conclusion Did or Did Not).

TABLE 2

WebCode	Methods/Techniques	Observations
	Microscopic Examination	Microscopic examinations of all four pages of the questioned document failed to reveal any observable differences in the toner printing process utilized to produce the machine-printed text on the four pages of the questioned document.
	Overlays	Layover examinations and comparisons between the text printed on page 1 and the text printed on pages 2 through 4 failed to reveal any significant differences. There are letters that exhibit non-smooth edges; the occurrence of these non-smooth edged letters is present on pages 1-4 but it is not consistent throughout the text, in any kind of repeated pattern.
YV7NM8	Visual Examination	1. Visual inspection revealed a lack of uniformity in the margin alignment. While pages 1, 2, and 3 have irregular margins (not justified), page 4 shows justified alignment. 2. A discrepancy was observed on page 1, where the names in the top margin do not match those listed in the inheritance division section.
	Microscopic Examination	1. After performing a high-resolution analysis with a trinocular microscope, it was determined that there is consistency in the printing system used on the pages. Furthermore, the "blank signature" scenario was ruled out, since no anomalous overlaps were observed between the toner/ink and the signature strokes. 2. Under various illumination methods (visual spectrum, raking light, transmitted light, oblique light, and episcopic light), the upper left area where the staple holes are located was examined. A lack of correspondence and coordination was found in the number and position of the holes between page 1 and pages 2, 3, and 4.
	ESDA	Analysis with the groove revealing equipment (ESDA or similar) yielded no trace of indented writing or additional elements.
YW28P9	Ruler	Measurements of the typeface, font and spacing indicate that the printed text on page 1 within the line "The names of my children are Cody Olson....Bradley Olson. All" is larger than the surrounding text. This line also protrudes further into the right-hand margin compared to any other text on the four pages. The four pages are left-justified with an uneven, but similarly proportioned, right-hand margin, as well as similar bottom and top margins, barring the aforementioned exception.
	Microscopic Examination	The printing method on all four pages of the Will appears similar from one page to another. The text shows similar features such as quality and variable coverage throughout the printed text.
	Macroscopic Examination	The Will was received with all 4 pages stapled. The staple was removed for the purposes of this examination and it was found that pages 2, 3 and 4 each include an additional pair of vacant staple holes. These additional holes are not present on page 1.
	ESDA	Indented impressions from the witness signatures (on page 4) were visualised on both pages 2 and 3. Indented impressions from the testator signature (on page 3) were visualised on both pages 2 and 4. No indented impressions of writing were visualised on page 1. Similar roller marks, possibly originating from the printing or paper manufacturing process(es), were visualised on all four pages of the Will.
	Ultraviolet Light	The four pages of generic, white office paper react similarly under UV light sources.

TABLE 2

WebCode	Methods/Techniques	Observations
	Typeface Comparison	At least two different typefaces are present on all four pages of the Will, with the most obvious differences being in the letter 'l' and the quotation marks. This intermittent and variable discrepancy with the quotation marks is noted on all four pages of the Will sometimes with respect to the same words. The difference with the 'l' is noted on page 1, where the 'l' in "I direct..." under Article II is a San Serif style, compared to the predominantly Serif style Times New Roman typeface used for the majority of the printed text on the four pages of the Will.
Z2CK6L	ESDA	Electrostatic Detection Apparatus (ESDA) examination of Exhibits Q1(1)(a and b) through Q1(4)(a and b) was conducted. Indented machine-created impressions were observed on Exhibits Q1(1)(a and b) through Q1(4)(a and b). Indented handwriting impressions were observed on Exhibits Q1(2)(a and b) through Q1(4)(a and b). No further indented handwriting impressions were observed on Exhibit Q1(1)(a and b). Indentation lifts were created to preserve the results of the ESDA examination. The indented impressions on Exhibits Q1(1)(a and b) through Q1(4)(a and b) were intercompared. The indented machine-created impressions observed on Exhibits Q1(1)(a and b) are not of the same type and design as the indented machine-created impressions observed on Exhibits Q1(2)(a and b) through Q1(4)(a and b). Furthermore, the original signatures on Exhibits Q1(3)a and Q1(4)a were observed as indented handwriting impressions on Exhibits Q1(2)(a and b) through Q1(4)(a and b). Therefore, Exhibits Q1(2)(a and b) and Q1(4)(a and b) were underneath Exhibits Q1(3)(a and b) when the signature on Exhibit Q1(3)a was written. Additionally, Exhibits Q1(2)(a and b) and Q1(3)(a and b) were underneath Exhibits Q1(4)(a and b) when the signature on Exhibit Q1(4)a was written. However, no indented handwriting impressions were observed on Exhibits Q1(1)(a and b).
	Macroscopic/Microscopic Examination	The questioned machine-generated entries on Exhibits Q1(1)a through Q1(4)a were prepared using black toner printing technology. Magnetic properties were observed within the questioned machine-generated entries on Exhibits Q1(1)a through Q1(4)a.
	Comparison	The questioned paper of Exhibits Q1(1)(a and b) through Q1(4)(a and b) was intercompared. The staple holes appear to align, though, it was not able to be determined whether or not the perforations on Exhibits Q1(1) through Q1(4) come from a single or multiple staple perforation(s). The questioned paper source in Exhibit Q1(2)(a and b) originated from or shares a common source with the questioned paper in Exhibits Q1(3)(a and b) and Q1(4)(a and b). Differences in the paper were observed between Exhibits Q1(1)(a and b) and Exhibits Q1(2)(a and b) through Q1(4)(a and b). Therefore, the paper used in the production of Exhibits Q1(2)(a and b) through Q1(4)(a and b) does not originate from or share a common source with the paper used in the production of Exhibit Q1(1)(a and b). However, it should be noted that paper of this type is manufactured in mass quantity and is available to the average consumer. No watermarks were observed on Exhibits Q1(1)(a and b) through Q1(4)(a and b).
	Handwriting Examination	The questioned signatures on Exhibits Q1(3)a and Q1(4)a are suitable for comparison with submitted known signatures.
Z2CMUQ	Oblique Light	Indentations observed on front and back of pages 2, 3, 4
	ESDA	Indentations observed on front and back of pages 2, 3, 4
	Video Spectral Comparator (VSC)	Paper fibers fluoresced on pages 1, 2, 3, 4 Ink drops out on pages 3, 4 Inks fluoresced on pages 3,4

TABLE 2

WebCode	Methods/Techniques	Observations
	Visual Examination	Staple holes on pages 1, 2, 3, 4
Z4JZDD	Ultraviolet Light	The degree of paper brightness on page (1) different from the other pages (2-3-4).
	Invisible rays (spot)	The degree of light reflection of the paper on page (1) different from the other pages (2-3-4)
	Transmitted Light	1- The Light transmittance of the paper on page (1) differed from other pages (2-3-4). 2- The two holes mentioned on page (1) have counterpart or similar holes on other pages (2-3-4), but the remaining holes on other pages (2-3-4) do not have counterpart or similar holes on page (1).
ZF9Y3U	Visual Examination	Font size and margin differences were observed in the first line of Article I on page 1. Extra staple holes were observed on pages 2 to 4 that were not observed on page 1.
	ESDA	Indentations of the witness signatures from page 4 were observed on pages 2 and 3 but were not observed on page 1.
ZMA9B9	Macroscopic/Microscopic Examination	The physical characteristics of the document were analyzed in four folios of the will of the deceased Stanley Olson, identified as item Q1, taking into account whether it presented any type of anomaly visible to the naked eye. Upon direct observation and with optical instruments such as magnifying glasses, it was noted that page 1 did not have a fold in its upper left corner, and that the following three folios had an additional perforation from stapling.
	Magnification	Subsequently, the area of the perforation was examined microscopically using a video comparator, confirming that there was indeed an additional perforation on each folio, resulting from a staple placed in a different location than the staple and perforation on page 1. Similarly, upon reviewing the four folios of the document, two printing smudges were found on the lower part of the front of the first folio, which were not present on the other three folios.
	Transmitted Light	When the first folio was superimposed on the other three folios, it was found that the right margin of the first folio was narrower than the margins of the other three folios. Similarly, the overlapping of the pages reveals that the spacing between letters varies, primarily in the titles, with shorter spacing on the first page compared to pages 2, 3, and 4 of the document.
ZMAB2C	Visual Examination	Extra holes from a staple in pages 2, 3, and 4. No extra holes in page 1. Similar "grain" and "mottle" in paper of all four pages.
	Magnification	Similar typing substance on all four pages. Similar typeface on all four pages.
	Magnetic viewing.	Typing substance on each page not magnetic to that viewer.
	Ultraviolet Light	Similar reaction from each of the four pages. Nothing untoward detected.
	ESDA	Indentations/embossments of the signatures on pages 3 and 4 found on pages two to four but not on page one.
ZMQ8QQ	Macroscopic/Microscopic Examination	Completed microscopic examination on all four pages, with microscope Leica MZ95, imaged with Canon camera EOS M50 MarkII. Consistent with toner printing throughout all pages. Unable to determine at this time if these documents were printed in their entirety at one time.

TABLE 2

WebCode	Methods/Techniques	Observations
	Transmitted Light	Examined Exhibit 1 using the Foster and Freeman Video Spectral Comparator VSC 8000. Oblique and transmitted light shows inconsistency with staples, page 1 has one solid perforation and no folding in that area. Oblique and transmitted light show inconsistency with staples on pages 2-4 with have multiple perforations and folding in that area. Observations in single perforations in page 1 and multiple on pages 2-4 suggest that page 1 was added/alterd separately and was not part of the original batch of documents.
	Ultraviolet Light	UV shows a slight difference in fluorescence for page 1 and pages 2-4 fluoresce similarly between them. Slight differences in UV suggest that page 1 may have been added/alterd separately and may have not been part of the original batch of documents.
	Infrared Light	IR show a visible difference in fluorescence for page 1 and pages 2-4 fluoresce similarly between them. Differences in IR suggest that page 1 was added/alterd separately and was not part of the original batch of documents.
	ESDA	Processed Exhibits 1(1-4) using the Foster and Freeman Electrostatic cascade method; decipherable impressions were observed on Exhibit (2-4) and no decipherable impressions were observed on for Exhibit 1(1), these are as follows: Page 1, no impressions. Page 2, impressions of signatures from page 3 and page 4. Page 3, impressions of signatures from page 3 and page 4. Page 4, impression of signature from page 3 These indented impressions are consistent with the staple perforations, the folding of these pages and the transcribed indented writing onto pages 2-4, and is also consistent with no indentations made on page 1, which suggest that this page was added/alterd after the signatures were made.
ZN7RDA	ESDA	Signatures from pages 3 and 4 were not observed indented on page 1 but were observed indented on page 2 using side light and electrostatic processing.
	Visual Examination	An additional set of staple holes were observed on pages 2 through 4 but were absent from page 1. A crease/fold on the stapled corners was observed on pages 2 through 4 but was absent from page 1. "All" alignment on far right of page 1 is out of alignment with the rest of the writing on the right side of the page. There is a lack of serifs on "I" in paragraph beginning "I direct that my just deeds ..." on page 1.
ZRLWC6	ESDA	page 1 did not yield any result for indentations, however pages 2, 3 and 4 did (indentations of the signatures)
	Ultraviolet Light	page 1 reacts differently compared to pages 2, 3 and 4, when light source was introduced
	Magnification	page 1 shows 2 staple holes, whereas pages 2, 3 and 4 shows 4 the letter "I" in the paragraph under "Article II" differs to the rest of the document
ZUTEAZ	Video Spectral Comparator (VSC)	Staple-holes identified on "Page 2", "Page 3" and "Page 4" differs with staple-holes identified on "Page 1". Therefore, this confirms that "Page 1" was not present when "Page 2" to "Page 4" were stapled together.
	ESDA	"Page 2" and "Page 3" contains indented signatures of the signatures of Witnesses found on "Page 4".
	ESDA	"Page 4" contains an indented signature of the signature of Testator found on "Page 3".

Response SummaryParticipants: **174** [No Response: **1**]**Methods Utilized**

ESDA	116	Magnification	26	Thickness	7
Handwriting Examination	2	Micrometer	6	Transmitted Light	39
Indented Writing	17	Microscopic Exam	45	UV Light	32
Infrared Light	15	Oblique Light	27	Visual Exam	84
Macroscopic Exam	15	Overlays	17	VSC	132
Macroscopic/Microscopic Exam	47	Ruler	15		

**Methods listed are the preloaded options for selection via the CTS Portal and do not reflect all answers provided by participants.*

Conclusions

TABLE 3

WebCode	Conclusions
2AEG49	Based on above observations it is concluded that page no. 01 of Questioned Four-page Last will and Testament have been substituted, therefore questioned document has been altered.
2E9J6N	The additional perforation marks on pages 2-4 indicate, that they were stapled together previously and the corresponding staple was removed, before they were re-stapled with page 1 as delivered. Since page 1 does not show additional perforations, it was not stapled previously. Furthermore, page 1 differs significantly from pages 2-4 in its paper characteristics. Additionally, latent intended impressions of the signatures of page 4 were only visible on pages 2 and 3, but not on page 1. Based on the witness statement, that all 4 pages were printed at one time and executed during a single signing ceremony, the aforementioned observations lead to the conclusion that the current page 1 was not part of the original document. Therefore, the questioned document has been altered.
2G7N4V	In our opinion, the original first page of this document has been replaced with an amended version. In our opinion, the remaining pages of the document do not appear to have been altered.
2UMJ4Y	In light of the observations mentioned in paragraph 2, I reached the conclusion that the four-page Last Will and Testament marked as "Page 1 of 4" to "Page 4 of 4" has been altered.
394RMH	The document consisting of LAST WILL TESTAMENT OF STANLEY OLSON has been altered.
3DETY9	In my opinion, there is conclusive evidence to show that the Will was not produced and signed in its entirety at one time. page 1 of the Will has been added at a different time from the other three pages.
3DU9RG	The questioned document has been altered.
3DU9U3	Based on the aforementioned observations, I came to the conclusion that the document in question has been altered and that page 1 of the document in question has been replaced.
3HAJ7K	1. Visual, microscopic, ultraviolet light box, EDD (Electrostatic Detection Device) and the VSC (Video Spectral Comparator) examination revealed the following findings: Q1 has one set of staple marks, Q2-Q4 has two sets of staple marks. See page 3 for interpretation. Q1 has fold line at staple area, Q2-Q4 has fold lines at staple area. See page 3 for interpretation. Q1 has margin and line spacing differences from Q2-Q4. Q1 does not contain indented impressions of signatures on Q3, Q4, Q2-Q4 contains indented impressions of signatures on Q3, Q4 which is consistent with pages being overlaid or stapled together at time of signing. Paper color differences observed in Q1 and Q2-Q4. Ultraviolet lighting color differences used for reporting purposes. See pages 3 and 4 for interpretation. 2. Lab item #1, Invoice #Q201486 was examined utilizing oblique/side lighting and EDD (Electrostatic Detection Device) for the possible presence of indented impressions. Aside from the laboratory number, lab item number, envelope outline, paper outline, or extraneous markings - no impressions were found. 3. Utilizing visual, microscopic, ultraviolet light box, EDD and the VSC, revealed that the document was altered by page substitution with Q1.
3P8AQV	The Four-page Last Will and Testament of Stanley Olson is Altered document.
43DRXP	As is routine in some cases, the questioned items were processed for latent writing impressions. Latent writing impressions may be made when writing is performed on one sheet of paper and leaves indentations on the pages below. The ESDA sheet provides a restoration or partial restoration of the original writing which created the impressions. Latent writing impressions were developed on the front and back side of Q1.2, Q1.3, and Q1.4. The questioned documents, Q1.1, Q1.2, Q1.3, and Q1.4, were also viewed macroscopically and microscopically and with the aid of various light sources, filters, and magnification using the Video Spectral Comparator (VSC). It has been determined that the four-page last will and testament appears to have been altered.

TABLE 3

WebCode	Conclusions
46YTH3	In the first page of the document in question, "Q1: Four-page will of the late Stanley Olson," there is a metal staple; however, the subsequent pages have two additional sets of perforations. The alignment of the left margin on page one differs slightly from that of the remaining pages. On the right margin of page one, in the line containing the children's names, there is misalignment with respect to the page number, the body of the text, and the alignment of the remaining three pages. The printing method is consistent across all four pages: it is a digital electrophotographic printing method using black toner particles, with greater toner density on page 1. The serif typeface is consistent across all four pages. The signatures are original and appear above the printed lines; the signature on page 3 leaves indentations on page 4. Based on the above findings, it is possible that page 1 has been altered by addition. Answer A. THE DOCUMENT IN QUESTION HAS BEEN ALTERED.
47C3TN	There is evidence to support the Last Will and Testament concerning decedent Stanley Olson, Item Q1, has been altered.
4DPELF	On further examination, I found as follows: 1. The alignment of top edge and the pattern of staple holes of 1st page of the will was different from the rest of the pages (pages 2 to 4) of the will and indicated that the 1st page of the will was not original page of the will. 2. The indented writing (signatures) deciphered on page 2 of the will were Andrea House's signature, Chance Steele's signature and Stanley Olson's signature on page 4 and 3 respectively. However, there was no indented writing (signatures) deciphered on page 1 of the will as observed on the page 2 of the will. Thus, indicated that page 1 of the will has been replaced. Conclusions: Hence, I am of the opinion that the questioned Last Will and Testament for Stanley Olson has been altered.
4MYGA2	There is strong evidence to indicate that the questioned document marked item 'Q1' was not altered.
4NVWLY	The research and studies carried out provide the following answers: The markings revealed during the examination for signs of tampering, along with the various staple marks, the text on page 4 is justified, but not the others lead us to conclude that the document has probably been altered. the same tool marks revealed during the search for evidence of tramplng, The fact that they were printed using the same printing technique leads us to conclude that the four pages were most likely printed on the same printer.
4XXGKK	The questioned document "Item Q1" contained evidence of alterations.
63LFD7	Based on the foregoing, it is possible to conclude that the document in question has been altered.
63MDN3	In the QD subject of this examination are found some technical alteration that indicate a possible substitution of the first sheet, part of this document.
643D77	The questioned document Q1 has been altered by the substitution of the first page.
69DNYZ	The first page of the questioned document has been changed.
6E4ZX3	FIRST. The questioned document (Q1), described previously in its corresponding section, is determined to be an ALTERED DOCUMENT based on the characteristics found. SECOND. The questioned document (Q1), described previously in its corresponding section, is determined to have an interfoliation alteration based on the characteristics found. THIRD. The questioned document (Q1), which consists of 4 sheets, was determined to have had sheet 1 added in its entirety, as printing discrepancies were observed in the pagination. Additionally, sheet 1 has fewer staple holes than sheets 2, 3, and 4, and it lacks the fold present on sheets 2, 3, and 4. FOURTH. The questioned document (Q1), described previously in its corresponding section, was determined, based on its characteristics, to have been created in four separate graphic stages, following the order in which the document was filled out. FIFTH. The questioned document (Q1), described previously in its corresponding section, was determined, based on its characteristics, to have been created using three writing instruments for the signatures: two black ink pens and one blue ink pen.

TABLE 3

WebCode	Conclusions
6FYFAZ	Page 1 was initially not part of the last will and testament document, it was inserted afterwards. Therefore there was fraud committed on the questioned document
6JV8FB	In my opinion, my findings, when taken collectively, show that Item Q1 has not been printed in its entirety at one time, and executed during a single signing ceremony. My findings show that it has been altered by substitution of page 1. Page 1 of Item Q1 was not part of the original four page document and has been stapled to pages 2, 3 and 4 of Item Q1 on a different occasion, after their folding and signing. Pages 2, 3 and 4 of Item Q1 were originally stapled to each other (with a different page 1) and folded over on each other for signing. Page 1 of Item Q1 was not part of this original document and was added after the documents were initially stapled, folded and signed using different paper.
6N6KXA	Based on the examination of the document entitled "Last Will and Testament of STANLEY OLSON," it must be concluded that the questioned document was altered by rebinding and replacing the first sheet of the authentic document.
6P22B8	Based on the examinations and observations, non-destructive optical analysis had limitations in detecting any discernible differences within the document. However, differences in staple impressions and layout features were identified, particularly on page 1, compared to pages 2, 3, and 4 of the questioned document (QD). On page 1, only a single pair of staple holes was observed. Indentation marks (i.e., the smaller holes or marks) associated with staple pressure were also observed; however, additional staple holes were not identified. In contrast, additional staple holes were identified on pages 2, 3, and 4. Certain layout features of page 1 were also found to differ slightly from those of the remaining pages. These findings suggest that page 1 may have been replaced separately from the remaining pages of the QD. Accordingly, the questioned document is considered to have possibly been altered in terms of its physical composition. However, no evidence of alteration or modification of the textual content was identified during the examination.
6TGBLP	The four-page document was examined with the result that in my opinion, the evidence supports the proposition that the four-page document has undergone an alteration that includes the removal and substitution of page 1. This is due to the optical differences observed between page 1 and the remainder of the pages (pages 2 to 4), the additional staple holes observed in pages 2 to 4 and the absence of indentations caused by the handwritten entries (signatures) on pages 3 and 4, detected on page 1.
6XFMGP	As a result of my examination, I have concluded the following: 1. The paper for page 1 reacted differently under IR luminescence when compared with that of pages 2, 3 and 4. Therefore, the paper used for page 1 is of a different source to that of pages 2, 3 and 4. 2. Page 3 was signed while on top of page 4 and page 2, in that order. Page 4 was signed while on top of page 2 and page 3, in that order. There is no indentation on page 1 from page 3 and 4 signatures. This is consistent with pages 2, 3 and 4 being turned under each other in order but not page 1, at the time of signing. 3. The first line of text under Article I on page 1 is of a larger font size when compared to comparable font in the rest of the document and extends further to the right than the rest of the document. 4. Pages 2 to 4 have been stapled together twice, and page 1 has been stapled once with pages 2 to 4. Therefore, in my opinion page 1 was not part of the original document signed by the testator and witnesses on pages 3 and 4 respectively. Further line 1 in Article I of page 1 has been produced with a different font size and right margin setting to the rest of the comparable document.
74WHXK	Item 1A: Oblique Lighting/ESDA - No Indentations Observed, N/A, 2 Lifts; IR Reflectance - No significant observations, 0 Files; IR Luminescence, No fluorescence observed, 0 Files Item 1B: Oblique Lighting/ESDA - Indentations Observed, Front and Back of Last Will and Testament, 2 Lifts; IR Reflectance - No significant observations, 0 Files; IR Luminescence, No fluorescence observed, 0 Files Item 1C: Oblique Lighting/ESDA - Indentations Observed, Front and Back of Last Will and Testament, 2 Lifts; IR Reflectance - Ink drops out, 1 File; IR Luminescence, Inks fluorescing, 2 Files Item 1D: Oblique Lighting/ESDA - Indentations Observed, Front and Back of Last Will and Testament, 2 Lifts; IR Reflectance - Ink drops out, 1 File; IR Luminescence, Inks fluorescing, 2 Files

TABLE 3

WebCode	Conclusions
768KL4	Stanley OLSON's document of last will and testament, composed of four numbered sheets, shows only on pages 2, 3 and 4 the holes of the double staple and the indented texts described, which implies that its first page is not the original and replaces the one originally accompanying the rest of the document.
772BRH	The questioned document was altered by removing the staple from the document, replacing the first page with a different one, and re-stapling the four pages with a metal staple.
7V3D74	This report contains the results of the questioned document examinations. Results of Examinations: Alterations were detected in the Item 1 (Item Q1) document. These alterations include inconsistent creasing of Item 1 (Item Q1) page 1 compared to the remaining pages, inconsistent staple hole alignment of Item 1 (Item Q1) page 1 compared to the remaining pages, the absence of indentations on Item 1 (Item Q1) page 1 and the presence of signature indentations on Item 1 (Item Q1) pages 2 through 4. Indented writing of unknown value was observed on Item 1 (Item Q1) using side-lighting and electrostatic processing. The electrostatic lifts used to capture and retain the indented writing are considered secondary evidence and have been designated Item 2. Images of the Item 2 indented writing are enclosed for your investigative assistance. Item 1 (Item Q1) was prepared using a toner printing technology. This technology is commonly found on numerous brands of printers/photocopiers/machines. Additional observations and assessments have been made regarding the submitted item and recorded for possible future examinations.
7V7WU8	1.The P2 through P4 of the document were printed at one time, and signed at the same time. 2.The original P1 was removed and replaced with another page,and then rebinding with a staple to the original P2 through P4.
7ZDMYX	Based on the aforementioned observations, I found that the original page 1 has been removed and replaced by the current page 1. The questioned "Last Will and Testament" document has therefore been altered.
87JGTU	A side-by-side comparison of the four pages was effected and I observed and concluded that an alteration by means of insertion was effected on the document. Page 1 of the document is not the initial page 1 of this document, it was changed. The initial page 1 contained signatures that were deciphered using an ESDA from page 2. The staple holes gives an indication that page 1 was stapled only once and the rest of the pages in the document were stapled more than once hence the conclusion of alteration by means of insertion.
88RVXE	Forensic examinations using magnification and specialized lighting revealed that the Last Will and Testament consisting of Exhibits 1-1 through 1-4 was altered. Ex. 1-1 (page 1) was not part of the original package. Evidence was observed that Exs.1-2 through 1-4 were once stapled together. Subsequently, they were unstapled, and Ex. 1-1 (page 1) was added and stapled to the top of Exs.1-2 through 1-4 thus creating a new package. This finding is made evident by a different number of staple holes present in Ex. 1-1 vs. Exs.1-2 through 1-4. Ex. 1-1 has one set of staple holes that align with those on Exs. 1-2 through 1-4. Exs.1-2 through 1-4 have additional staple holes that align indicating they had been stapled together at some point previously. The paper used for Ex. 1-1 also appears optically different from the paper used for Ex. 1-2 through 1-4. Furthermore, the right margin and the page number in the footer on Ex. 1-1 are not aligned with those of Exs. 1-2 through 1-4. Line 6 of Ex. 1-1 specifically is placed further to the right than any of the other text appearing on Ex. 1-1 or the text on Exs. 1-2 through 1-4. Finally, indentations of the signature appearing on Ex. 1-3 appear on Exs. 1-2 and 1-4. Indentations of the signatures appearing on Ex. 1-4 appear on Ex. 1-3. These indentations show that the papers were in physical contact with each other when the Will was being signed. No indentations of the any of the signatures were observed on Ex. 1-1. The witnesses stated that all pages of the Will were printed at one time and executed during a single same signing ceremony. The combination of the above findings does not support this but instead supports the claim that the Will was altered.
8BTUBT	The document in question marked as "Q1a" (page 1) was not printed at one time with the documents marked as "Q1b" to "Q1d" (page 2 to page 4) and executed during a single signing ceremony, it was added after the signing was done, therefore the "Will" was altered.

TABLE 3

WebCode	Conclusions
8ET67T	1. I found sufficient evidence that "Page 1" was initially not part of the document (Last Will and Testament of Stanley Olson) and was inserted later.
8F6KY9	The questioned document HAS BEEN ALTERED.
8FA6LB	Neither the absence of staple holes linking page 1 directly to the remaining pages, nor the absence of corresponding indentations on page 1 consistent with the remaining pages, individually provides strong support for concluding that page 1 was not part of the original document. However, the concurrent presence of these findings suggests that the questioned document has probably been altered.
8FNN9U	The questioned document has been altered.
8G2DFC	The inconsistencies in binding history, layout formatting, and paper luminescent characteristics indicate that page 1 was not originally part of the same production sequence as pages 2 through 4.
8J9FJW	After my observations, I concluded the document was not printed in its entirety at one time, and was not executed during a single signing ceremony. Therefore the document has characteristics of being fraudulent. It was altered.
8TUGZ7	There are indications of the replacement of pages in this document. Or this document has been altered.
8UQZ28	Based on the result of the expertise, i conclude that the document from exhibit QD has been altered.
8X7RQE	The staple holes visible on page 1/4 differ from the staple holes visible on page 2-4. Under transmitted light, the substrate material of page 1/4 differs slightly from the substrate material of pages 2-4. The right-hand margin of page 1/4 is irregular. The formatting of the text one page 4/4 differs from the formatting used on page 1-3 (pages 1-3 are left-aligned, whereas page 4/4 is justified). An impression transfer of the signature appearing on page 3/4 is observable on page 4/4. No significant differences were found in the print quality.
9KY2N8	On further examination, I found as follows: 1. The staple marks on the Page 1 showed different pattern from the staple marks on the Page 2, Page 3 and Page 4. 2. Indented writing of Andrea House's signature, Chance Steele's signature and Stanley Olsen's signature on Page 4 and page 3 respectively were deciphered on page 2. However no indented writing was deciphered on page 1 as observed on page 2. These indicated that the page 1 has been replaced. Hence, I am of the opinion that the Questioned document of "Last Will and Testament of Stanley Olsen" has been altered.
9QLRB3	[No Conclusions Reported.]
9T6ZYU	In light of the observation I reached the conclusion that the questioned document marked as "Q1" to "Q4" was altered.
A3XEYT	AS A RESULTS OF THE ABOVE MENTUONED OBSERVATIONS,I HAVE REACHED A CONCLUSION THAT THE DOCUMENT WAS ALTERED.

TABLE 3

WebCode	Conclusions
A89LEQ	An inspection of the document under examination revealed differences between the first page and the remaining pages 2, 3 and 4 of the Last Will regarding the layout of the texts, the characteristics of the paper and the number of holes left by the stitches for binding the various sheets. In particular: the width of the right margins indicates that the texts on the first sheet were written to the computer within a file with different layout settings than those of the file used to write the texts of the other three pages; the characteristics of the paper indicate that paper of a different quality was used for printing page 1 than that used for printing sheets 2, 3, 4; the number of binding holes present in the upper right corner of each page shows that sheets 2, 3 and 4 were first stapled with a metal stitch, that this stitch was subsequently removed, that the first page was inserted and that the four sheets were then bound with the current metal staple. It follows from the foregoing that the first sheet of the Last Will and Testament under consideration was added subsequently to pages 2, 3, 4 and that, therefore, the questioned document was altered from its original version.
AE4RTY	ALTERATION EXAMINATIONS Alterations Were Detected Item 1 (Q1), page 1 contains the following characteristics of alteration: Staple hole discrepancy: 1 set of staple holes on page 1 with 2 sets on pages 2 through 4. Right margin discrepancies compared to pages 2 through 4. Impression discrepancy: Page 1 does not contain the impression of the signatures on pages 3 and 4, which would be expected if it was stapled and folded over together with the other pages that do contain the impressions of the original signatures. ADDITIONAL EXAMINATIONS It should be noted that font discrepancies were observed in Item 1 (Q1). In particular, the text under Article II, beginning "I direct..." on page 1 contains an "I" that is different than the font on the remaining areas of Item 1 (Q1). Indented writing was observed on pages 2 through 4 of Item 1 (Q1) using side lighting and electrostatic processing. The original electrostatic lifts are considered secondary evidence and have been designated Item 2. No indented writing was observed on page 1 of Item 1 (Q1) using side lighting and electrostatic processing. Item 1 (Q1) was prepared using a black magnetic toner printing process, with original inked signatures on pages 3 and 4. Toner printing is commonly available on various brands of laser printers, photocopiers and other office machines. Additional assessments and observations have been made regarding the submitted item and recorded for possible future comparisons.
ANAE4K	The findings provide extremely strong support for the proposition that Page 1 was substituted. Under the premise that the document was produced and executed during a single ceremony, the physical evidence—specifically the disparate staple holes and the absence of latent indentations on Page 1—confirms that the original first page was replaced after the document had been initially assembled and signed.
ANPVYD	1. Document Q-1 was examined for impressions with positive results, using the above listed methods. Two (2) ESDA lifts were retained in the Document Examination Unit case file. Impressions of the "Stanley Olson" signature on page 3 were noted on pages 2 and 4. Impressions of the "Andrea House" and "Chance Steele" signatures on page 4 were noted on pages 2 and 3. No impressions of the signatures on pages 3 and 4 were noted on page 1 of document Q-1. 2. ALTERED (PAGE SUBSTITUTION): Examination of document Q-1 revealed alteration via page substitution. As page 1 did not have any impressions of the signatures on pages 3 and 4, page 1 only had one set of staple holes in the upper left corner (pages 2, 3, and 4 had two sets of staple holes), and page 1 was printed on a paper that presented differently under normal and ultraviolet lighting conditions than the rest of the pages, page 1 is not original to document Q-1 and has been substituted.
ATJRLJ	The questioned document (a Last Will executed on November 10, 2025, by Stanley Olson) HAS BEEN ALTERED.

TABLE 3

WebCode	Conclusions
AXZWKE	The original staple used on the last will has been removed and the original page 1 has been replaced with the current page 1. The last will was then stapled with a new staple. Because of this, page 1 has only one set of holes. This is in contrast to pages 2 to 4, which all have two sets of holes. Furthermore, the crease / fold in the paper that would normally be expected in the top-left corner of page 1 is missing (turning the pages of a document that is held together with a staple). Furthermore, a minor difference in behaviour under UV light and in paper thickness is noticeable between page 1 and pages 2 to 4. The position of the entry "Page 1 of 4" is slightly offset compared to the other similar entries (Page 2/3/4 of 4).
B2WZP7	The examination of the questioned four page document included use of a light box, digital microscope, magnifiers, grids, and font identifiers. After thoroughly examining each page for anomalies in text, a further examination of the paper was conducted. There were no visible water marks on the pages. There was indented writing noted, however not identifiable without the use of ESDA. That would require the document to be transported to an independent lab. The upper left corners of each document in question was examined to determine the staple holes in each. The staple holes in each upper left corner differed, especially page one. Since there is no way to determine if the document was stapled and unstapled to make additional copies after the fact, one can only conclude that the first page with only three hole is suspect since the subsequent pages have more holes than the first page.
BAMLTJ	Item Q1 was examined for the presence of any alteration using non-destructive testing techniques. These examinations resulted in the following conclusions. - Item Q1 has been altered. There is evidence to support that Q1 was not printed in its entirety at one time and that the current page 1 was added at a later time. All four pages of Q1 were processed for indented writing using an electrostatic detection apparatus (ESDA2) resulting in the following observations: - No indented writing was developed on page 1. - The signatures on pages 3 and 4 were indented onto page 2. - The signatures on page 4 were indented onto page 3. - The signature on page 3 was indented onto page 4. The derivative indented writing lifts (Q1a - Q1d) were returned with the submitted evidence. Copies were retained in the case file.
BB26GM	Forensic and comparative examinations were conducted on Exhibit Q1 utilizing a video spectral comparator and stereomicroscope. Exhibit Q1 was produced using black-only toner technology. Original writing was observed in the signature blocks on Exhibits Q1-3 and Q1-4. No original writing was observed on Exhibits Q1-1 and Q1-2. Exhibits Q1-2, Q1-3, and Q1-4 appear to contain evidence of at least two (2) staple hole sets. Exhibit Q1-1 appears to contain evidence of only one (1) staple hole set. Therefore, Exhibit Q1 contains evidence of alteration. Exhibit Q1-1 was not originally part of Exhibits Q1-2, Q1-3, and Q1-4. Chemical and comparative examinations utilizing Thin-Layer Chromatography and a video spectral comparator were conducted on representative samples of the toner on Exhibits Q1-1 through Q1-4. The toner formulation on Exhibits Q1-1 through Q1-4 were found to be chemically indistinguishable. Therefore, Exhibits Q1-1 through Q1-4 toner cannot be excluded as sharing a common source. Chemical and comparative examinations utilizing Thin-Layer Chromatography and a video spectral comparator were conducted on representative samples of the paper from Exhibits Q1-1 through Q1-4. At this level of analysis, Exhibit Q1 was found to contain at least two (2) different types of paper. Exhibit Q1-1 was determined to be part of Paper Family 1, and Exhibits Q1-2, Q1-3, and Q1-4 were determined to be part of Paper Family 2. The paper from Exhibits Q1-2, Q1-3, and Q1-4 were determined to be chemically indistinguishable from one another. Therefore, Exhibits Q1-2, Q1-3, and Q1-4 paper cannot be excluded as sharing a common source. The paper from Exhibit Q1-1 was determined to be different from the paper of Exhibits Q1-2, Q1-3, and Q1-4. Therefore, Exhibit Q1-1 paper can be excluded from sharing a common source with Exhibits Q1-2, Q1-3, and Q1-4 paper.
BFTEPZ	The questioned document HAS NOT BEEN ALTERED.
BK9PZH	The document identified as: 26-5211/01/C/TestamentoStanley, shows signs of alteration.
BUVNT9	[No Conclusions Reported.]

TABLE 3

WebCode	Conclusions
C4JRK9	The findings support the proposition that the questioned Last Will and Testament document was not prepared as purported.
CGJX7R	THE DOCUMENT(Four-page Last Will and Testament) WAS ALTERED.
CLY9GA	Methods Visual examination and comparison of the submitted item (Q1) was completed. A hand lens and microscope were used for the examination. Instrumental examination was performed using an electrostatic detection device on the Last Will and Testament in item Q1. The paper and inks in item Q1 were also examined instrumentally with various light sources. Findings The Last Will and Testament in item Q1 was altered from its original state. The first page of the document was not present when the original document was generated. Visual Examinations -there is only one set of staple holes on page 1 of item Q1 while pages 2, 3, and 4 have two sets of staple holes -prior to removing the staple from item Q1 for examination it was observed that page 1 had no fold creases near the staple while pages 2, 3, and 4 had creases from being folded near the staple Instrumental Examinations using VSC -the paper used for page 1 of item Q1 could be differentiated from the paper used on pages 2, 3, and 4 (Source Exclusion); the paper used for pages 2,3, and 4 could not be differentiated (Inconclusive) -the signatures on item Q1 were all written with different inks; one signature is in blue ink and the two signatures written in black ink could be differentiated (Source Exclusion) Instrumental Examinations using an ESDA -no indented writing was developed on page 1 of item Q1 -indented writing was developed on page 2 of item Q1 with signatures that appear to be consistent with the signatures on pages 3 and 4 -indented writing was developed on page 3 of item Q1 with signatures that appear to be consistent with the signatures on page 4 -indented writing was developed on page 4 of item Q1 with a signature that appears to be consistent with the signature on page 3 Remarks Images generated during this examination are being retained. Q1 is available for return.
CPYJCA	Methods A visual examination and comparison of the submitted items was completed. Instrumental analysis was also done using the Video Spectral Comparator (VSC) and Electrostatic Detection Apparatus (ESDA). Instrumental Analysis Pages 1-4 of Item #1 were examined with various light sources and the paper of page 1 could be differentiated from the paper of pages 2-4 (Source Exclusion). The paper of pages 2-4 could not be differentiated from each other; however, this does not preclude that the papers may have come from different sources (Inconclusive). Pages 1-4 of Item #1 were examined with various light sources and the printing processes of the four pages could not be differentiated. However, this does not preclude that they may have come from different sources (Inconclusive). The ink on pages 3 and 4 of Item #1 was examined with various light sources and the ink from all 3 signatures could be differentiated. The ink from each signature originated from a different source (Source Exclusion). Page 4 of Item #1 was processed for indented writing using an ESDA. The developed indented writing is consistent with the signature on page 3 of Item #1. Remarks Page 1 of Item #1 has only one set of staple marks. Pages 2-4 each have two sets of staple marks. Page 1 appears to have been inserted and stapled after pages 2-4 were previously stapled together. Based on the findings listed above, Item #1 was altered. VSC and ESDA images were retained in LIMS. All items are available for return. If additional items are to be submitted, please re-submit the original items in their original [Laboratory] labeled packaging.
D27P6N	A side-by-side comparison of the four pages was effected and I observed and concluded that an alteration by means of insertion was effected on the document. Page 1 of the document is not the initial page 1 of this document, it was changed. The initial page 1 contained signature indentations that were deciphered using an ESDA from page 2. The staple holes give an indication that page 1 was stapled only once and the rest of the pages in the document were stapled more than once hence the conclusion of alteration by means of insertion.
D8WYDZ	The questioned document, Qc1, demonstrates characteristics indicative of alteration.

TABLE 3

WebCode	Conclusions
DD4R8W	ALTERATIONS EXAMINATIONS Alterations were Detected It was determined that the Item 1 (Q1) questioned document was altered due to the disagreement in indented writing between page 1 and page 2, secondary staple holes present in pages 2 through 4, and the lack of fold at the staple area of page 1. It was determined page 1 of Item 1 (Q1) was not attached to the remaining pages of Item 1 (Q1) at the time the Item 1 (Q1) questioned document was signed.
DNKA2N	Based on the examination and comparison of the submitted evidence, there are indications that the Last Will and Testament may have been altered. The witnesses for the will have stated that the document was printed in its entirety at one time and executed during a single signing ceremony. Examination identified four features that warrant consideration in light of that account. First, Page 1 contains a different number of staple holes than pages 2-4. Second, pages 2-4 exhibit a fold crease in the top left corner, while Page 1 shows no such fold crease. Third, pages 2-4 exhibit indentations corresponding to the signature entries from the document, while Page 1 shows no such indentations. Fourth, Page 1 displays formatting discrepancies relative to the remainder of the document, including differences in font size and margins. Considered in isolation, each of these features could have an innocent explanation. Staple hole and fold crease discrepancies could arise from post-execution handling if a page were separated from the assembly and later reattached. Formatting variations alone are not necessarily indicative of substitution. The absence of signature indentations on Page 1, however, is of particular significance. If the document had been printed in its entirety and executed as a single, assembled instrument during one signing ceremony as the witnesses describe, the pressure applied during the signature entries would be expected to produce indentations transferring through the stacked pages, including Page 1, unless the pages were unstapled at the time of signing. The presence of such indentations on pages 2-4 but not on Page 1 suggests that Page 1 was not part of the page stack at the time the signatures were executed. Furthermore, if a page had been inadvertently omitted from the original stapling and subsequently reattached, Page 1 would be the least likely to be overlooked, as it occupies the top position in the assembled document and is most visible during assembly. Taken collectively, the convergence of these four observations, particularly the absence of signature indentations on Page 1 and the differences in staple holes and creases, is more consistent with a substitution of Page 1 than with the single printing and single signing ceremony described by the witnesses.
DQN6KR	Based on the aforementioned observations, I came to the conclusion that the document has been altered. The physical characteristics indicate that page 1 was not part of the same original document set as pages 2, 3, and 4, and was likely substituted after the initial binding of the document.
DWCV62	Based on the physical and instrumental examinations of Item 001, it was determined that the first page of Item 001 has been substituted for the original first page. The examination revealed evidence that the fastening device (i.e. staple) was removed and replaced. Also, there were indented impressions of the signatures observed on pages 3 and 4 noted on pages 2, 3, and 4. This indicates, along with the folds/creases in the upper left corner of pages 2, 3, and 4, that the pages were folded backwards as documents were being signed. There were no folds/creases noted on page 1 and there were no indented impressions of the signatures on page 1.
E3WBBJ	The results support to some extent that the questioned document has been altered (Level +1)
E9NHUT	The [laboratory] gives conclusions based on a probability scale. On our scale which consists of four positive conclusions, a neutral inconclusive conclusion, og fire negative conclusions. In this case, we would have given the document a mild, negative conclusion, which is just on the lower side of inconclusive: The document is with a certain probability forged.
EGW9WW	The questioned document identified as "Last Will and Testament of STANLEY OLSON", printed on 4 pages, is not altered.
ENFEVM	El documento cuestionado ha sido alterado mediante la sustitución de la hoja paginada con el número 1. [CTS Translation: The document in question has been altered by substituting the page numbered 1.]

TABLE 3

WebCode	Conclusions
EUL9PJ	In the questioned document being the "Last will and testament of Stanley Olson," the same which consists of 04 pages, INDICATIONS OF ALTERATION ARE DETECTED
FEMH8R	Characteristics were observed that indicate Item 1 (Q1) was altered. The following observations indicate that page 1 was substituted: Inconsistent number of staple holes: Page 1 is secured with a single staple, whereas pages 2 through 4 exhibit an additional set of staple holes. The additional staple holes on pages 2 through 4 are not present on page 1, indicating that pages 2 through 4 were previously bound together independent of page 1. Inconsistent alignment of page numbering on page 1 compared to those on pages 2 through 4. Examination under transmitted light revealed that the alignment of "Page 1 of 4" is slightly offset relative to the positioning of the page numbering on pages 2 through 4. Indented writing consistent with the signatures on pages 3 and 4 was observed on page 2, indicating that page 2 was positioned directly beneath the signature pages at the time of execution. Corresponding indented writing was not observed on page 1, indicating it was not in the same position within the document stack at the time the signatures were applied. A slight difference in paper thickness between page 1 and the remaining pages 2 through 4. Indented writing was observed on Item 1 (Q1) pages 2, 3, and 4 using side light and electrostatic processing. The resulting indented writing lifts are considered secondary evidence and have been designated Item 2. No indented writing was observed on Item 1 page 1 using side lighting and electrostatic detection. Additional observations and assessments have been made regarding Item 1 (Q1) and recorded for possible future comparisons.
FK8JM6	Each page of the document is of the same type of writing-printing-copying paper, of which the 2nd, 3rd and 4th pages are identical in tone, color and overview image, while the first page has the listed features to a minimal extent, but differs from the others. The black text of the pages printed from a computer environment shows uniform editing features, but there are anomalies in terms of text positions. Although the text is left-aligned, the paragraph on page 4 is justified, thereby marking the right edge of the editing area. However, the text of the "Article 1" column on the first page extends significantly to the right of this margin line, i.e. the right margin on the first page differs from that of pages 2-3-4. This may be the reason why the centered text parts of the first page occupy a different position than the same elements on pages 2 and 3. The text on all pages was displayed using a monochrome laser printer with an electrophotographic operating principle. No significant difference can be detected in terms of print morphology, the printing ink shows magnetic properties on all pages, the extent of which is also the same. The signatures appearing on pages 3 and 4 are written in natural handwriting, with a heavy hand, and their extent varies. The imprints of the testator's and witness 2's signatures can be detected on the other pages of the document as follows: 1. The imprint of the testator's signature on page 3 can be observed on page 4, i.e. when the first and second pages were prepared, they were folded along the staple. 2. The imprint of witness 2's signature can be detected on pages 2 and 3, i.e. when the first three pages were prepared, they were folded around the staple and folded under page 4. However, such traces cannot be detected on the first page, although based on what has been described, the imprint of the witness's signature should appear there. Examining the stapling of the sheets, it can be established that on the first sheet only the pair of holes caused by the current staple can be identified, while on sheets 2, 3 and 4, an additional pair of holes that fit exactly together can also be observed in the same place. The paper material of the latter also has a fold edge along the first staple applied in the same place. Based on all these signs, it can be concluded that the document has been manipulated in terms of content: after the signatures of the testator and the owner were placed on the first page, the page securing clip was removed and the document was replaced, and then the document was stapled again. The first page was made using a slightly different material than the other pages, but with regard to the printed content, it cannot be ruled out that it was displayed from the same computer environment and by the same printer. Based on the characteristics revealed, it can be clearly stated that the document in question HAS BEEN ALTERED by replacing the first page and then re-stapleting the pages.
FKC4B8	ALTERED (PAGE SUBSTITUTION): Examination of document Q-1 revealed there was a page substitution. Page 1 of 4 on document Q-1 was substituted for another page due to the additional staple holes found on pages 2-4, the fold impressions found on pages 2-4 but not found on page 1, and the slight paper color variation of page 1 compared to pages 2-4.

TABLE 3

WebCode	Conclusions
GBFMY9	Item 1A: Oblique Lighting/ESDA - No Indentations Observed, N/A, 2 Lifts; IR Reflectance - No Significance Observations, 0 Files; IR Luminescence - Paper fibers fluorescing, 1 File Item 1B: Oblique Lighting/ESDA - Indentations Observed, Front and back of page 2, 2 Lifts; IR Reflectance - No Significant Observations, 0 Files; IR Luminescence - Paper fibers fluorescing, 3 Files Item 1C: Oblique Lighting/ESDA - Indentations Observed, Front and back of page 3, 2 Lifts; IR Reflectance - Ink drops out, 2 Files; IR Luminescence - Paper fibers and inks fluorescing, 7 Files Item 1D: Oblique Lighting/ESDA - Indentations Observed, Front and back of page 4, 2 Lifts; IR Reflectance - Ink drops out, 2 Files; IR Luminescence - Paper fibers and inks fluorescing, 14 Files
GCB7ZA	In the examination of the questioned document, we found that page 1 was not originally part of the four-page document but was replaced after the signatures on the document were written. Therefore, the four-page document is forged.
GL3NG4	The document Testament and Last Will of Stanley Olson, dated "10th day of November, 2025," numbered "Page 1 of 4," "Page 2 of 4," "Page 3 of 4," and "Page 4 of 4," identified Q1, PRESENTS ALTERATION BY SUBSTITUTION of the first page of the document "Page 1 of 4."
GLX6TZ	The document identified as Q1 was determined to have been altered. Page 1 of 4 was substituted after it had been signed with the testator's final will information and in the presence of the witnesses. The signatures executed on pages 3 of 4 and 4 of 4 were applied over all the pages, with the exception of page 1 of 4.
H6Q8A2	Physical, microscopic, instrumental, and comparative examinations resulted in the following findings: The Item Q1 Last Will and Testament has been altered via disassembly, page substitution, and reassembly. The original Item Q1, page 1, has been removed and replaced with an alternative page. This finding is supported by the following: - Staple holes: The presence of one (1) set of staple holes on Item Q1, page 1, versus the presence of two (2) sets of staple holes on Item Q1, pages 2 through 4. - Folds: The presence of upper left corner paper folding on Item Q1, pages 2 through 4, while Item Q1, page 1, did not display upper left corner paper folding. - Paper: The presence of a different reaction of Item Q1, page 1, versus Item Q1, pages 2 through 4, under alternate light sources. - Indented impressions: The presence of sourced indented impressions to other exhibits within Item Q1, pages 2 through 4, and no indented impressions present on Item Q1, page 1. - Formatting, spacing, and font: The formatting and spacing of Item Q1, page 1, is different than the formatting and spacing of Item Q1, pages 2 through 4. Additionally, the font size in the first line under "Article I" is slightly larger than the font size in the remainder of Item Q1.
HCRMV3	The questioned document "Last Will and Testament of STANLEY OLSON" (Q1) has been altered. This determination is supported by the lack of technical consistency between "Page 1 of 4" and the remaining pages, particularly in terms of ink chromaticity and homogeneity, as well as the number of mechanical fastening perforations, which differ from the patterns observed in "Page 2 of 4," "Page 3 of 4," and "Page 4 of 4."
HDM38Z	Result In the evidence identified as "Last will and Testament of STANLEY OLSON," which consists of 4 pages, alterations are detected. There was a replacement of page number 1 of the questioned document, which is evidenced by previous staple holes, as well as the change in the font format and alignment of page 1 compared to pages 2, 3, and 4. Interpretation The questioned document described above is altered.
HGLJH9	1. The Evidence Description below is clarified as follows: Exhibit 1(1-4) – Questioned Last Will and Testament Exhibit 1.1 – EDD Lift of Exhibit 1(2) Exhibit 1.2 – EDD Lift of Exhibit 1(2) back Exhibit 1.3 – EDD Lift of Exhibit 1(3) Exhibit 1.4 – EDD Lift of Exhibit 1(3) back Exhibit 1.5 – EDD Lift of Exhibit 1(4) Exhibit 1.6 – EDD Lift of Exhibit 1(4) back 2. Based on an examination of the evidence submitted, there are indications Exhibit 1 questioned document has been altered. 3. Exhibit 1(1-4) was examined for the presence of indented impressions. Decipherable indented impressions were observed on Exhibit 1(2-4) and captured on EDD lifts Exhibits 1.1-1.6. No decipherable indented impressions were observed on Exhibit 1(1).

TABLE 3

WebCode	Conclusions
HLWQLX	Page 1 of 4 has been replaced. It displays only a single staple mark in the upper left area of the sheet, whereas the other three sheets (2 of 4 through 4 of 4) display double staple marks. Furthermore, the alignment of the page numbering "page 1 of 4" is shifted to the left compared to the rest of the sheets.
HUVA73	A. The questioned document has been altered. The 4 pages were not printed at the same time, so the first page 1 of 4 of the will was changed.
HZY3EC	The questioned document exhibits evidence of an alteration as evidence by the following: Page 1 was not stapled to pages 2-4 when signed because signature indentations were not present on page 1, page 1 did not have an extra set of staple holes that were present on pages 2-4, and page 1 did not have a fold near the staple like pages 2-4. The first line under the "Article I" header that reads, "The names of... Bradley Olson. All" is larger in size than the rest of the printed information and is outside the right-side margin. The language was inconsistent on page 1 vs. page 2, particularly with the surviving beneficiaries. When referring to each of the surviving beneficiaries, the city that's mentioned next to their names is stated "Sterling, Virginia" on page 1 vs. "of Sterling, Virginia" on page 2.
HZYP8	Based on the examination findings and the contextual information provided in the scenario, it can be concluded that page 1 of the questioned last will and testament (item Q) has been altered.
J3K8MA	Based on the observations made and nature of the questioned document examined, there is strong evidence to support that the questioned document has been altered.
JFK3K2	Visual, microscopic and magnetic examinations of Exhibits Q1(1)a through Q1(4)a were conducted. Visual examination of Exhibits Q1(1)b through Q1(4)b was conducted. The results are as follows: Paper Examination The questioned paper within Exhibit Q1 was inter-compared. Exhibit Q1(1) has one set of staple holes, whereas Exhibits Q1(2) through Q1(4) have at least two sets of staple holes. The questioned paper within Exhibit Q1 could neither be identified, nor eliminated, as originating from or sharing a common source, due to a lack of individualizing characteristics. The paper within Exhibit Q1 was not distinguishable at this non-destructive level of analysis. If destructive testing of the paper is requested, the evidence should be sent to a laboratory that conducts destructive paper examinations. Printing Processes The questioned machine-generated entries on Exhibits Q1(1)a through Q1(4)a were inter-compared. The questioned machine-generated entries on Exhibits Q1(1)a through Q1(4)a were produced with toner printing technology with magnetic properties and could neither be identified, nor eliminated, as having been prepared by the same printer, due to a lack of individualizing characteristics. Indented Impression Examination Side-lighting examination of Exhibits Q1(1)(a and b) through Q1(4)(a and b) was conducted. Electrostatic Detection Apparatus (ESDA) examination of these exhibits was also conducted. The observations were inter-compared. The results are as follows: No handwritten indented impressions were observed on Exhibits Q1(1)(a and b). The original handwritten signature on Exhibit Q1(3)a was observed as indented handwriting impressions on Exhibits Q1(2)(a and b) and Q1(4)(a and b). The original handwritten signature on Exhibit Q1(3)a was observed as indented handwriting impressions on Exhibit Q1(3)b; however, these impressions are not of evidentiary value. The original handwritten signatures on Exhibit Q1(4)a were observed as indented handwriting impressions on Exhibits Q1(2)(a and b) and Q1(3)(a and b). The original handwritten signatures on Exhibit Q1(4)a were observed as indented handwriting impressions on Exhibit Q1(4)b; however, these impressions are not of evidentiary value. Indented machine-created impressions were observed on Exhibits Q1(1)(a and b) through Q1(4)(a and b). The indented machine-created impressions observed on Exhibits Q1(1)(a and b) are of the same type and design as the indented machine-created impressions observed on Exhibits Q1(2)(a and b) through Q1(4)(a and b). The results of the side-lighting examination were preserved digitally. Indentation lifts were created to preserve the results of the ESDA examination. Therefore, due to the results above, characteristics of an alteration were observed within Exhibit Q1. Ink and Handwriting Examination The questioned signature on Exhibit Q1(3)a was prepared using black non-ball point ink. The questioned signatures on Exhibit Q1(4)a were prepared using blue and black ball point inks. These signatures on Exhibits Q1(3)a and Q1(4)a are suitable for comparison with submitted known exhibits.

TABLE 3

WebCode	Conclusions
JN47UP	According to the study, the following was determined from the items submitted for inspection: The document under inspection shows alteration on page one of Mr. Stanley Olson's will, specifically a substitution; however, it was not possible to establish the original text.
JNYRLV	Observations support a probable conclusion of document alteration. An examination of the document showed the following differences: 1) Page 1 had one set of staple holes while pages 2, 3, and 4 had two sets of staple holes; 2) The paper brightness and opacity were different between page 1 and subsequent pages; and 3) Page 1, Article I, Line 3, had a longer right margin than all other lines across the four pages of the document.
JXPDP9	Based on visual and instrumental examinations, it was determined Item Q1 was altered via page substitution of Page 1. This finding is based on the following observations: -The optical properties of the paper used in Page 1 are different from optical properties of the paper used in Pages 2 through 4. - The optical properties of the paper used in Pages 2 through 4 are similar to each other. - There are less staple holes in Page 1 than there are in Pages 2 through 4. - There are sourced indented impressions present on Pages 2 through 4 which suggest that Pages 2 through 4 were stacked on top of each other when Pages 3 and 4 were signed. - The indented impressions on Page 2 were sourced to the signatures on Pages 3 and 4. - The indented impressions on Page 3 were sourced to the signatures on Page 4 - The indented impressions on Page 4 were sourced to the signature on Page 3. - No discernible indented impressions were observed on Page 1.
KC2BAY	Item Q1 has been altered.
KC7R8X	There was a request to determine, if possible, whether the Last Will and Testament for Stanley Olson may have been altered from its original state. An examination for alterations was conducted utilizing a visual exam, enhanced visual exam / magnification, Electrostatic Detection Device (EDD) for indented impressions, and a Video Spectral Comparator (VSC) for alternate light source examinations. Based upon these examinations, it was determined that the questioned will was not in its original state and that a page substitution has occurred at some point. Page 1 was not part of the original document (as printed, stapled together, and signed as was the case with Pages 2 through 4).
KKDL2Q	The questioned document, consisting of the WILL of Mr. STANLEY OLSON, was altered by replacing page 1.
KUZQ86	Item Q1a: Oblique Lighting/ESDA - No Indentations Observed, N/A, 2 Lifts; IR Reflectance - No significant observations, 1 file*, IR Luminescence, See note below table**, 1 file**. Item Q1b: Oblique Lighting/ESDA - Indentations Observed, Front and back of Q1b, 2 Lifts; IR Reflectance - No significant observations, 1 file*, IR Luminescence, See note below table**, 1 file**. Item Q1c: Oblique Lighting/ESDA - Indentations Observed, Front and back of Q1c, 1 file/2 Lifts; IR Reflectance - Ink appears lighter, 3 files*, IR Luminescence, Inks fluorescing, 3 files**. Item Q1d: Oblique Lighting/ESDA - Indentations Observed, Front and back of Q1d, 1 file/2 Lifts; IR Reflectance - Ink appears lighter, 3 files*, IR Luminescence, Inks fluorescing, 4 files**. * Images captured with magnification to document printing process characteristics, one image from each of the four pages of Q1. ** Images captured to document luminescing particles, one image from each of the four pages of Q1. Four additional images captured with a scanner to document staple holes and handwriting.
KYFV9K	The results of the examination extremely strongly support that the questioned document has been altered by substituting page 1.
KZCCKH	in line of the above i made the conclusion that the document was not printed in its entirety at one time and was not executed during a single signing ceremony, as a result fraud was committed on the questioned document.

TABLE 3

WebCode	Conclusions
L87ZC7	There is extremely strong support for the proposition that Exhibit 1 is an altered document and that the alteration was accomplished by page substitution. There is extremely limited support for the proposition that Exhibit 1 is not an altered document. Significant findings supporting the opinion are: The four pages of Exhibit 1 were fastened together by a staple. There are no additional staple holes on page 1. There are additional holes on pages 2, 3, and 4, which are consistent with staple holes caused by a prior stapling of pages 2, 3, and 4 without page 1. Pages 2, 3, and 4 have creases near the staple holes. The positioning of the creases is consistent with folding back sheets for signing or copying; however, folding the pages back for either purpose on a stapled Exhibit 1 would have also caused a crease on page 1. Exhibit 1 was examined for indented writing using an Electrostatic Detection Apparatus (ESDA). ESDA lifts were created (sub-exhibits 1.1 through 1.8). The writing of the signature on page 3 caused indentations on pages 2 and 4. The writing of the two signatures on page 4 caused indentations on pages 2 and 3. The writing of the three signatures on pages 3 and 4 did not cause indentations on page 1; however, page 1 would necessarily bear indentations of the three signatures for the stapled document to receive the indentations described above (except for the page 3 signature indentation on page 4). When examined for infrared luminescence, pages 2, 3, and 4 have a bright luminescence while page 1 does not exhibit luminescence. When page 1 is aligned with one of pages 2, 3 or 4 on a transmitted light box, the text of page 1 is not in horizontal registration with the text of pages 2, 3, or 4. Also, the page number entry on page 1 begins about one character (uppercase P) to the left of the position for pages 2, 3, and 4. When combined, there is extremely strong support for the proposition that page 1 of Exhibit 1 has been substituted.
LDVDFF	1. There is sufficient evidence to support the proposition that the document in question Will and Testament, marked as "Q1" to "Q4" was altered. 2. The document in question marked as "Q1" was not printed and executed together with the documents in question marked as "Q2" to "Q4" during a single signing ceremony.
LQJFWL	The document under inspection (Last Will and Testament of STANLEY OLSON) in four (4) folios presents alteration on page No. 1, in the substitute modality, however, it was not possible to establish the original text.
M4YX4F	The examination of the questioned "Last Will and Testament" document revealed material inconsistencies between Page 1 and Pages 2–4. Conclusion is that the four-page "Last Will and Testament" was altered.
M4YZTK	ALTERATIONS Alterations were detected Based on physical inconsistencies between page 1 and the remaining pages, it was determined that Item 1 (Item Q1) was altered. Pages 2 through 4 of Item 1 (Item Q1) displayed a fold and extra set of staple holes in the upper left corner. No fold or extraneous staple holes were observed on page 1 of Item 1. Indented writing was observed on pages 2 through 4 of Item 1 (Item Q1) using oblique lighting and/or electrostatic processing. This indented writing was attributed to the written signatures on page 4 and/or page 3. No indented writing was observed on page 1 using the aforementioned techniques. The electrostatic lifts, used to capture and retain the indented writing, are considered secondary evidence and have been designated Item 2. Spacing differences were observed within words appearing in the first line of text under Article I (page 1) compared to other comparable entries within page 1 and pages 2 through 4 of Item 1 (Item Q1). Differences in alignment of text along the right margin for the Article I and Article II paragraphs of page 1 were also observed when compared to the remaining paragraphs on page 1, as well as pages 2 through 4 of Item 1 (Item Q1). ADDITIONAL EXAMINATIONS Inconsistencies in the fluorescent properties of page 1 of Item 1 (Item Q1) compared to pages 2 through 4 were observed. Variance in fonts and formatting were observed throughout the Item 1 (Item Q1) document, to include an instance of sans serif font (limited entry on page 1), mixed quotes (all pages), and justification (page 4). All pages of Item 1 (Item Q1) were prepared using magnetic toner printing technology. This technology is commonly found on numerous brands of printers/photocopiers/machines. Additional observations and assessments have been made regarding Item 1 (Item Q1) and recorded for possible future examinations.

TABLE 3

WebCode	Conclusions
MH7QVT	The printed text of Stanley Olson's will was printed on an electrophotographic printer. The signatures on pages 3 and 4 of the will were written with different inks. No signs of correction (traces of mechanical, chemical and thermal effects) were detected in the printed text of the will and the signatures
MHHPQ2	Based on the findings of our examination, the document was not produced in one sitting.
MXT7W4	A visual and microscopic examination was conducted on Exhibit 1(1-4). Exhibit 1(1-4) was also examined using various lighting techniques. There are some indications to suggest that Exhibit 1(1) was not originally a part of Exhibit 1(1-4) and that the questioned document has been altered. Exhibit 1(1-4) was processed for the presence of indented writing impressions. Impressions were observed on Exhibits 1(2-4). No impressions were observed on Exhibit 1(1).
N2PEG6	Overall, there are inconsistencies between the first page of the will, and the remaining three pages. The scenario information states that the will was produced in one sitting, and that the testator's daughter believes that an additional beneficiary is present on the will. The first page of the will contains the names of the beneficiaries. Therefore, based on my observations of the inconsistencies between the first page of the will and the remaining three pages, in my opinion, the document has been altered, likely through the substitution of the first page of the will.
N8ERHR	"In my opinion, pages 2–4 of Q1 have undergone an additional stapling event beyond that evident on the document as currently received (and visible on page 1). Pages 2–4 also exhibit creasing at the top left-hand corner that corresponds to the presence of this additional staple, whereas page 1 does not. I find that pages 2–4 variously display indented impressions arising from the writing of the signatures present on pages 3 and 4. In my opinion, the positions and relative strengths of these indentations indicate that another page was present at the time the signatures were written, and that this page was not the current page 1, which shows no corresponding indented impressions. In my opinion, these findings demonstrate that, when page 3 was signed the order of the pages was: Page 3, page 4, "different page 1", page 2, and when page 4 was signed the order of the pages was: Page 4, "different page 1", page 2, page 3 (where "different page 1" represents another page which was in the position of the current page 1 at the time of signing). One possible explanation which accounts for these findings is that at the time that pages 3 and 4 were signed, the pages were stapled together in the order "different page 1", page 2, page 3, page 4. To sign each of page 3 and 4 the required page was brought to the front of the stack by folding the pages over each other whilst constrained by the staple. This would put the pages in the order described above and could produce the fold observed in the top left area. I also find that the paper used for pages 2–4 is consistent across those pages and differs from the paper used for page 1. Taking these findings together, it is my opinion that Q1 has been altered in that it originally had a different page 1 stapled to it, and that this page has subsequently been replaced with the current page 1. Additionally, in my opinion, the text line "The names of my children are Cody Olson, Jasmine Olson, Kyle Olson, Jenna Olson, and Bradley Olson. All" on the current page 1 has been subject to a significantly different editing regime compared with the remainder of the body text on page 1 and the rest of the document. Although there are a variety of possible explanations for this finding, one possible explanation is that the original page 1 was available as an electronic copy and that the line "The names of my children are Cody Olson, Jasmine Olson, Kyle Olson, Jenna Olson, and Bradley Olson. All" was inserted or edited as a separate event."
N9ABJU	The examination results show that the questioned document has probably been altered. Although the findings indicate forgery, it cannot be entirely excluded that the observed characteristics may have different origin. Our expert opinion is that the questioned document has probably been altered. Sheet number 1 was probably replaced with a different one.
NALAE3	Extra/vacant stapler holes were observed in the upper left corner on pages 2, 3 and 4. On page 1 no extra/vacant stapler holes were observed. This indicates that the original 4-page document has been dismantled and the page 1 has been substituted. Moreover, on pages 2, 3 and 4 indented impressions matching with signatures made on other pages of the document were observed. On page 1 no significant indented impressions were observed. Based on the aforementioned findings it is concluded that the document has been altered by substituting page 1.

TABLE 3

WebCode	Conclusions
NE2KR7	The questioned document Q1 was examined. An extra set of staple holes was found on each of the sheets of pages 2-4, but not on the sheet of page 1. The extra sets of staple holes on pages 2-4 were found to be at similar position when Q1 was viewed under transmitted light. Examination revealed that the sheet of paper of page 1 exhibited different optical properties from the other sheets of paper of pages 2-4. A fold mark near the staple position was found on each of the sheets of paper of pages 2-4, but not on the sheet of page 1. ESDA examination revealed that the indented mark of the signature (Stanley Olson) on page 3 appeared on page 4 and page 2, but not on page 1; the indented marks of the signatures (the witnesses) on page 4 appeared on page 2 and page 3, but not on page 1. Based on the findings in ESDA examination, (i) the signature on page 3 was executed when page 4 and page 2 were stacked underneath page 3, but the page 1 in Q1 was not in the stack; (ii) the signatures on page 4 were executed when page 2 and page 3 were stacked underneath page 4, but the page 1 in Q1 was not in the stack. In view of the above findings, the questioned document Q1 was altered by page substitution of the sheet of paper of page 1.
NEG2NK	ALTERATION EXAMINATIONS Alterations Were Detected It was determined that Item 1 (Q1) was altered based on physical inconsistencies between page 1 and the remaining pages. Item 1 (Q1) page 1 has one set of staple holes while Item 1 (Q1) pages 2 through 4 have two sets each. Additionally, indented writing was observed on Item 1 (Q1) pages 2 through 4 using side lighting and/or the Electrostatic Detection Apparatus (ESDA). No indented writing was observed on page 1 using the aforementioned methods. The indented writing attribution is as follows: Item 1 (Q1) Page Source Page 1 No indented writing observed Page 2 Signatures from pages 3 and 4 Page 3 Signatures from page 4 Page 4 Signature from page 3 The ESDA lifts, used to capture and retain the indented writing, are considered secondary evidence and have been designated Item 2. ADDITIONAL OBSERVATIONS Inconsistencies were noted between the Item 1 (Q1) page 1 right line arrangement in sections "Article 1" and "Article 2" when compared to the remaining portions of page 1 as well as pages 2 through 4. No watermarks were observed on Item 1 (Q1) pages 1 through 4 using transmitted lighting. The printing on Item 1 (Q1) pages 1 through 4 was prepared using a magnetic black toner printing technology that is commonly found on numerous brands of office machines. Additional observations and assessments have been made regarding the submitted item and recorded for possible future examinations.
NHGCHY	In summary, it is stated that the 1st page of the testament has been exchanged.
NJWC2N	The questioned Item 1/QD Last Will and Testament of Stanley Olson was probably altered.
NV2PWU	Comprehensively considering the discrepancies in print alignment, the mismatch in the number of perforations, and the distinct difference in the paper substrate under infrared luminescence (IRL), it is determined that Page 1 originates from a different paper stock and source than Pages 2 through 4. This strongly indicates a high probability that the first page has been subsequently substituted or altered.
NZF7RD	SOLE: The will in the name of Stanley Olson dated November 10, 2025, consisting of 4 pages. Identified as evidence QD in its respective Chain of Custody record; IT DOES PRESENT DOCUMENTARY ALTERATION DUE TO PAGE SUBSTITUTION.
P2PU4P	Based on the findings, in my opinion, the examination of Item Q1 revealed there was evidence of alteration which supported the Stanley Olson's daughter's concerns. Therefore, the questioned Last Will and Testament (Item Q1) HAS BEEN ALTERED by the removal of the original page 1 and substituted it with a new page 1.
P67Y3K	Alterations Were Detected It was determined that the Item 1 (Q1) document was altered based on the following observations: more than one set of staple holes on pages 2 through 4, while only one set of staple holes present on page 1; lack of indented writing on page 1, while indented writing on pages 2 through 4 was observed and attributed to pages 3 and/or 4; Various formatting inconsistencies on page 1 of 4 (font discrepancy, difference in alignment of text along the edge of the right margin of Article I and II paragraphs, misalignment of the position of the pagination).

TABLE 3

WebCode	Conclusions
P96DNN	The questioned Last Will and Testament for Stanley Olson has been altered. Page 1 of 4 contained one set of staple holes, while Page 2 of 4, Page 3 of 4, and Page 4 of 4 exhibited two sets of staples in the upper left corner of the document.
PAZWPP	Basic on ultraviolet light inspection, transmitted light and remove the staple , its obviously that page1 of this last will is different from page2, 3 and 4, the question documents has been altered, page1 wasn't the originated last will .
PJ3D2T	Comprehensively considering the discrepancies in print alignment, the mismatch in the number of perforations, and the distinct difference in the paper substrate under infrared luminescence (IRL), it is determined that Page 1 originates from a different paper stock and source than Pages 2 through 4. This strongly indicates a high probability that the first page has been subsequently substituted or altered.
PK3E3D	Page 1 is different to pages 2, 3 and 4 of the "Last Will and Testimony of STANLEY OLSON". Page 1 was inserted to replace the original page 1.
PN2RLW	1. Laboratory item #1, Invoice #Q201485, pages1 through 4, designated Q1.1 through Q1.4 respectively, were examined utilizing oblique/side lighting and EDD (Electrostatic Detection Device) for the possible presence of indented impressions. Aside from the laboratory number, lab item number, envelope outline, paper outline, or extraneous markings - no impressions were found. However, impressions were found that have originated from the original questioned documents (see page 3 of this report for interpretation). 2. Utilizing the VSC (Video Spectral Comparator) did not reveal exclusionary differences between the four pages Q1.1 through Q1.4 with respect to their responses to alternate light sources; however, microscopic examination under the floodlight revealed that page Q1.1 exhibits a different shade of white color in comparison to pages Q1.2 through Q1.4. 3. Visual and microscopic examination as well as instrumental analysis and comparison of the four pages of the questioned document disclosed the following: a. Page Q1.1 exhibits different spacing between Article I and Article II paragraphs when compared to the spacing between paragraphs on pages Q1.2 through Q1.4. b. Page Q1.1 exhibits a different shade of white color in comparison to pages Q1.2 through Q1.4. c. Page Q1.1 exhibits only one set of staple holes in comparison to pages Q1.2 through Q1.4, which exhibit two sets of staple holes, indicating that pages Q1.2 to Q1.4 were re-stapled. d. Examination of Q1 questioned document revealed that pages Q1.2, Q1.3, and Q1.4 share common indented impressions of the original signatures from pages Q1.3 and Q1.4, thus indicating that the pages were bound and/or stacked during signing. However, while the signatures from pages Q1.3 and Q1.4 produced indented impressions on subsequent and underlying pages, no such impressions were detected on page Q1.1, indicating that page Q1.1 was not part of the document-stack at the time of signing (see comparison chart on page 3). 4. Analysis, comparison, and evaluation of the four pages Q1.1 through Q1.4 of Q1 document resulted in the following opinion. a. Q1 questioned document was altered by substitution of page 1 (Q1.1).

TABLE 3

WebCode	Conclusions
PNHNEW	Visual and microscopic examinations of Exhibits Q1(1)(a and b) through Q1(4)(a and b) were conducted. The questioned paper within Exhibit Q1(1)(a and b) was compared with the questioned paper within Exhibits Q1(2)(a and b) through Q1(4)(a and b). Differences in the properties (i.e., optical or spectral characteristics) of the paper, and the amount and placement of the staple holes within the paper of Exhibit Q1(1)(a and b) were observed. The questioned paper within Exhibit Q1(1)(a and b) does not originate or share a common source with the questioned paper within Exhibits Q1(2)(a and b) through Q1(4)(a and b). The questioned paper within Exhibit Q1(2)(a and b) originated from or shares a common source with the questioned paper within Exhibits Q1(3)(a and b) and Q1(4)(a and b); however, it should be noted that paper of this type is manufactured in mass quantity and is available to the average consumer. Additionally, a similar amount and placement of the staple holes were observed within the paper of Exhibits Q1(2)(a and b), Q1(3)(a and b) and Q1(4)(a and b). Electrostatic Detection Apparatus (ESDA) examination of Exhibits Q1(1)(a and b) through Q1(4)(a and b) was conducted. Indented handwriting and machine-created impressions were observed on Exhibits Q1(2)(a and b), Q1(3)(a and b) and Q1(4)(a and b); however, the handwriting impressions on Exhibits Q1(2)b, Q1(3)b and Q1(4)b are not of evidentiary value. Indented machine-created impressions were observed on Exhibit Q1(1)(a and b); no further indented impressions were observed. Indentation lifts were created to preserve the results of the ESDA examination. The questioned machine-generated entries on Exhibits Q1(1)a, Q1(2)a, Q1(3)a and Q1(4)a were prepared using toner printing technology. The questioned machine-generated entries on Exhibit Q1(1)a were compared to Exhibits Q1(2)a, Q1(3)a and Q1(4)a. The questioned machine-generated entries on Exhibits Q1(1)a were prepared by the same printer/printing technology on Exhibits Q1(2)a, Q1(3)a and Q1(4)a. No font differences were observed within the questioned machine-generated entries on Exhibits Q1(1)a, Q1(2)a, Q1(3)a and Q1(4)a. The questioned Stanley Olson signature on Exhibit Q1(3)a was prepared using black non-ballpoint ink. The questioned Andrea House signature on Exhibit Q1(4)a was prepared using blue ballpoint ink. The questioned Chance Steele signature on Exhibit Q1(4)a was prepared using black ballpoint ink. Ink differences were observed between the inks on Exhibits Q1(3)a and Q1(4)a, and within the inks on Exhibit Q1(4)a. The questioned Stanley Olson signature on Exhibit Q1(3)a, and questioned Andrea House and Chance Steele signatures on Exhibit Q1(4)a are suitable for comparison with submitted known signatures.
Q66LVH	The document under inspection shows an alteration on the first page, in the substitute modality, where a page has been added to replace the original page.
QWAJQK	Through the support of the different laboratory equipment and special illuminations such as diascopic, episcopic, infrared and fluorescence, it was observed that the first sheet of the questioned material was changed in its entirety, which is evident in the difference in the management of the graphic space, interlinear separations, arrangement of the texts between sheets 2, 3 and 4 compared to sheet 1. Likewise, it is observed that sheets 2, 3 and 4 show microperforations in the upper left area related to the holes that they leave the sewing hooks, an aspect that sheet No. 1 does not present. From the above it is determined that a substitutive alteration of the first sheet occurs.
R7QRQY	No indented impressions of evidentiary value were developed on Q1a. Indented impressions from the signatures on Q1c and Q1d were developed on Q1b. Indented impressions from the signatures on Q1d were developed on Q1c. Indented impressions from the signature on Q1c were developed on Q1d. The Q1 document was probably altered by page substitution. An opinion of "probably" means that there is strong evidence in the questioned document, including variation in margin size, inconsistency in staple holes, and location of indented impressions, to support that an alteration by page substitution is more likely than not. This opinion falls short of the "virtually certain" degree of certainty.
RB7XQE	The document identified as a will consisting of 4 sheets, shows the replacement of sheet 1 with the rest of the sheets that the document presents, revealing documentary alteration by replacement of the sheet in its entirety.

TABLE 3

WebCode	Conclusions
RDAT9W	Result Statement: The questioned documents, Items 1A-1D, were examined for alterations microscopically, digitally, and with various light sources. The questioned documents were also examined for indented writing. Based on these examinations, it is my opinion that the questioned four-page Last Will and Testament, Items 1A-1D, was altered by means of a page substitution of the first page, Item 1A. Examinations: Indented Writing Examination: The questioned item(s) was/were examined for the presence of any indented writing, typing, or other identifying impressions using oblique lighting and/or an Electrostatic Detection Device (EDD). These are impressions sometimes left on paper from writing, typing, or other markings done on another page while it was superimposed over the questioned material. These examinations revealed the following: 1A: There were no impressions recovered in Item 1A. 1B: There were impressions recovered in the front of Item 1B, sourced to the original writing (signatures) on Items 1C and 1D. 1C: There were impressions recovered in the front of Item 1C, sourced to the original writing (signatures) on Item 1D. 1D: There were impressions recovered in the front of Item 1D, sourced to the original writing (signature) on Item 1C. There were no other meaningful impressions located in the remaining questioned documents. Method of Production Examination: The Items 1A-1D questioned sheets of paper were produced with an office machine system utilizing black toner. Toner, is utilized in some office machines such as laser printers, photocopiers, and facsimile devices. The Items 1A-1D questioned sheets of paper were examined with no visible watermarks observed. The four sheets of paper exhibit similar class characteristics, such as size, color, and response to ultraviolet and infrared light sources indicating they may share a common source. Alterations Obliterations Erasures Examination: The fonts and alignment of the machine printing on the questioned documents, Items 1A-1D, were examined visually, microscopically, and digitally with no overt discrepancies observed within or between the documents. The questioned documents, Items 1A-1D, were examined for alterations microscopically, digitally, and with various light sources. The 4-page questioned document (1A-1D) was submitted to the laboratory stapled together with a single staple binding the documents. However, the second, third and fourth pages (1B, 1C and 1D) were also observed to contain a second set of staple holes that overlaid precisely with each other. This second set of staple holes was not observed in the first page, Item 1A. The last three pages of the document, Items 1B-1D, also contained a similar fold pattern in the top left corner of the document near the staple that was not observed on the first page, Item 1A.
RZ4ZGK	The Last Will and Testament contains evidence of alterations, as that term is defined within the applicable ANSI/ASB standard. Specifically, pages 2 through 3 contain an additional set of staple holes not present on page 1. Further, the marginal spacing on page 1 differs from that observed on pages 2 through 4. The section numbering on page 1 is likewise inconsistent with the corresponding section numbering appearing on pages 2 through 4. Collectively, these observations provide evidence that page 1 was not originally assembled with pages 2 through 4 in its present form.
RZNFU2	After conducting an exhaustive analysis of the document, an alteration was observed on page number one, as it does not have the characteristics found on pages two and three.
T8KT8A	In light of the abovementioned observation I reached the conclusion that the questioned "Last Will and Testament" document marked as Q1 to Q4 was altered.
TB23HT	In my opinion, the physical examination of the will, established that page 1 has been inserted into the will.
UANNQD	I reach the conclusion that the document has been altered, the document was not printed in its entirety at one time and not executed during a single ceremony.

TABLE 3

WebCode	Conclusions
UMDP8J	Through examination and technical analysis of the questioned will of Stanley Olson, it was found that the first page of the will is forged and that the current first page was added after the removal of the original first page. This conclusion is based on the following technical observations: * A clear difference in the printing format, margins, and line spacing of the first page compared to the remaining pages (2–4). * A noticeable variation in toner density (ink intensity) on the first page in comparison with the other pages. * A difference in the font size and style used on the first page versus the remaining pages (2–4). * The presence of inconsistent spacing between characters, indicating possible horizontal displacement.
UU9R9V	The examinations carried out on document Q-1 revealed the presence of physical elements that can only be explained by a substitution of page 1 of the document.
UUCCWY	The evidence strongly indicates that page 1 has been substituted.
V63KWC	The document under inspection shows alterations in the tabulation area, paragraph spacing, and page numbering. It also has two additional staple holes.
V7JGMQ	Based on the above observation using magnification and specialize lighting techniques, Page 1 was not part of the original package and was not executed as described in the scenario. Page 1 was inserted and the document has been altered.
VA2YJ3	The questioned Last Will and Testament (Item Q1) has been altered by way of a page substitution. Page one of the questioned Last Will and Testament is a replacement page of the Will.
VAJQV8	based on the results of the of the analysis, the document was altered as the original page 1 was replaced with the current page 1.
VBE9W9	Based on the abovementioned observations, I came to the finding that page 1 was inserted therefore, the document in question was ALTERED
VZT8EE	Alterations Were Detected Based on physical inconsistencies between page 1 and the remaining pages, it was determined that the Item 1 (Q1) document was altered. Page 1 of Item 1 (Q1) did not contain double staple markings or a crease line, whereas pages 2 through 4 did. Indented writing examinations were conducted on pages 1 through 4 of Item 1 (Q1) using side-lighting and electrostatic processing. Page 1 of Item 1 (Q1) did not contain indentations of any signature, while indented writing on pages 2 through 4 was observed and attributed to signatures on page 3 and/or page 4. The electrostatic lifts used to capture and retain the indented writing are considered secondary evidence and have been designated Item 2. The right-side margin of the page 1 Article 1 paragraph of Item 1 (Q1) extended past the right-side margin of the other pages.
W2JQV7	In light of the above mentioned observations, I reached the conclusion that there was indeed alteration done on the will and Testament document.
W2MAJ9	The results indicate that there are differences between the the first page and the rest of the pages. They differ in thier response to IR and thier fibers visually appear different. We can conclude with high probability that the first page is of a different batch than the rest of the pages. However, this result does not meant that there is a sufficient evidence to conclude whether or not the document has been altered.
WQMMPQ	The disputed will was altered because the first page was changed.
WRWR3E	The document under inspection (Last Will and Testament of STANLEY OLSON) shows alteration on the first page, in a substituted form; however, it was not possible to establish the original text.
WVGJEH	The questioned document has been altered
XB4JHL	The questioned Last Will and Testament for Stanley Olson (Q1) has been altered. The original page 1 was removed, and a new page 1 was added.

TABLE 3

WebCode	Conclusions
XGBZZM	The Document in Question (Will) has been altered.
XT9QYA	Considering the abovementioned observation, I reached the conclusion that "Q1.1" was added or substituted later after the document was stapled, thus the disputed four page 'Will and Testament' marked "Q1.1" to "Q1.4" was altered.
XW86KD	A four-page document's first page has been altered.
Y7N96H	Based on the combined findings from infrared examination and magnification analysis, it is evident that page number (1) does not share the same origin or handling history as the remaining pages. Accordingly, the evidence supports the conclusion that the original first page of the document titled "Last Will and Testament of Stanley Olson" has been replaced with the current page number (1), constituting a form of document alteration.
Y8YBRG	On further examination, I found as follows: i) No Indented signatures was deciphered on "Page 1 of 4" as indented signatures were deciphered on page "Page 2 of 4" of the questioned Last Will and Testament. ii) The indented signatures deciphered on page "Page 2 of 4", "Page 3 of 4" and "Page 4 of 4" were consistent to the signatures on "Page 3 of 4" and "Page 4 of 4" respectively of the questioned Last Will and Testament. iii) The pattern of staple holes on "Page 1 of 4" were not consistent to the pattern of staple holes on "Page 2 of 4", "Page 3 of 4" and "Page 4 of 4". These indicated that the "Page 1 of 4" of the questioned Last Will and Testament (Item Q1: Four-page Last Will and Testament concerning decedent Stanley Olson) had been replaced. Hence, I am opinion that, the four-pages of the questioned Last Will and Testament (Item Q1: Four-page Last Will and Testament concerning decedent Stanley Olson) has been altered.
YKP62P	Pages 2-4 of the submitted Will have a strong crease in their top left corner by the staple. This is not present on page 1. Indentations of the Testator's signature on page 3 are present on pages 4 and 2. Indentations of the Witnesses signatures on page 4 are present on pages 2 and 3. These findings are consistent with the pages of the Will being progressively folded back on themselves as the signature on page 3 and those on page 4 were completed. Page 1 does not have the crease or any signature indentations. This provides evidence that the current page 1 of the submitted Will was not part of the document when it was signed.
YP6EET	In my opinion, there is evidence of alteration to the document, whereby, the original page 1 was replaced after the Will was signed.
YR8DPL	The questioned document titled: "Last Will and Testament of STANLEY OLSON" dated "10th day of November, 2025," printed on one side of four (4) letter-sized sheets of paper, PROBABLY HAS NOT BEEN ALTERED, in accordance with the studies carried out and the technical reasoning previously presented.
YR8DR8	Examinations of and comparisons between the four pages of the questioned four-page document titled Last Will and Testament for Stanley Olson revealed evidence the questioned Will was altered.
YV7NM8	The analyzed document, which is presented as a four-page will, exhibits a documentary alteration by total substitution of page 1. This determination is based on the inconsistencies of format, the contradictions of content and the lack of continuity in the mechanical perforations with respect to the rest of the documentary body.

TABLE 3

WebCode	Conclusions
YW28P9	When assessing and interpreting my findings I have considered the two following competing propositions: P1 - The Will has been altered P2 - The Will has not been altered The observations regarding the lack of indented impressions on page 1 from any of the signatures written on pages 3 and 4, the presence of only one set of staple holes on page 1 compared to two sets on pages 2 – 4, and the larger size of printed text on page 1 for the line “The names of my children are Cody Olson....Bradley Olson. All” (under Article I), are consistent with proposition (P1) that the Will has been altered by way of a substitution of page 1. The findings are also consistent with the proposition (P2) that the Will has not been altered. The paper, printing method, mixed typefaces, general formatting and impressions of rollermarks appear similar across all four pages of the Will. The larger line of text concerning the children’s names (under Article I) could be a genuine or deliberate error during preparation of the document. The absence of indented impressions on page 1 from any of the three wet ink signatures may be due to page 1 not being in association with the other pages when pages 3 and 4 were signed (for example, if page 1 had been placed to one side). With regards to the staple holes, it is possible that pages 2 – 4 were stapled together without page 1, the error was noted, the original staple was removed from pages 2 – 4, and a new staple was used to secure all four pages together. In my opinion, the findings provide approximately equal support of the proposition that the Will has been altered (P1) and for the proposition that the Will has not been altered (P2). The evidence as to whether or not the Will has been altered is therefore inconclusive.
Z2CK6L	Visual and microscopic examinations of Exhibits Q1(1)(a and b) through Q1(4)(a and b) were conducted. Magnetic examinations of Exhibits Q1(1)a through Q1(4)a were conducted. Electrostatic Detection Apparatus (ESDA) examination of Exhibits Q1(1)(a and b) through Q1(4)(a and b) was conducted. Indented machine-created impressions were observed on Exhibits Q1(1)(a and b) through Q1(4)(a and b). Indented handwriting impressions were observed on Exhibits Q1(2)(a and b) through Q1(4)(a and b). No further indented handwriting impressions were observed on Exhibit Q1(1)(a and b). Indentation lifts were created to preserve the results of the ESDA examination. The indented impressions on Exhibits Q1(1)(a and b) through Q1(4)(a and b) were intercompared. The indented machine-created impressions observed on Exhibits Q1(1)(a and b) are not of the same type and design as the indented machine-created impressions observed on Exhibits Q1(2)(a and b) through Q1(4)(a and b). Furthermore, the original signatures on Exhibits Q1(3)a and Q1(4)a were observed as indented handwriting impressions on Exhibits Q1(2)(a and b) through Q1(4)(a and b). Therefore, Exhibits Q1(2)(a and b) and Q1(4)(a and b) were underneath Exhibits Q1(3)(a and b) when the signature on Exhibit Q1(3)a was written. Additionally, Exhibits Q1(2)(a and b) and Q1(3)(a and b) were underneath Exhibits Q1(4)(a and b) when the signature on Exhibit Q1(4)a was written. However, no indented handwriting impressions were observed on Exhibits Q1(1)(a and b). The questioned machine-generated entries on Exhibits Q1(1)a through Q1(4)a were prepared using black toner printing technology. Magnetic properties were observed within the questioned machine-generated entries on Exhibits Q1(1)a through Q1(4)a. The questioned paper of Exhibits Q1(1)(a and b) through Q1(4)(a and b) was intercompared. The staple holes appear to align, though, it was not able to be determined whether or not the perforations on Exhibits Q1(1) through Q1(4) come from a single or multiple staple perforation(s). The questioned paper source in Exhibit Q1(2)(a and b) originated from or shares a common source with the questioned paper in Exhibits Q1(3)(a and b) and Q1(4)(a and b). Differences in the paper were observed between Exhibits Q1(1)(a and b) and Exhibits Q1(2)(a and b) through Q1(4)(a and b). Therefore, the paper used in the production of Exhibits Q1(2)(a and b) through Q1(4)(a and b) does not originate from or share a common source with the paper used in the production of Exhibit Q1(1)(a and b). However, it should be noted that paper of this type is manufactured in mass quantity and is available to the average consumer. No watermarks were observed on Exhibits Q1(1)(a and b) through Q1(4)(a and b). The questioned signatures on Exhibits Q1(3)a and Q1(4)a are suitable for comparison with submitted known signatures.

TABLE 3

WebCode	Conclusions
Z2CMUQ	Item 1A: Oblique Lighting/ESDA - No indentations observed, N/A, 2 Lifts; IR Reflectance - No significant observations, 0 Files; IR Luminescence, Paper fibers fluoresce, 1 File Item 1B: Oblique Lighting/ESDA - Indentations Observed, Front and Back of Last Will and Testament, 2 Lifts; IR Reflectance - No significant observations, 0 Files; IR Luminescence, Paper fibers fluoresce, 1 File Item 1C: Oblique Lighting/ESDA - Indentations Observed, Front and Back of Last Will and Testament, 2 Lifts; IR Reflectance - Ink drops out, 2 Files; IR Luminescence, Paper fibers fluorescing, 1 File, Inks fluorescing, 1 File. Item 1D: Oblique Lighting/ESDA - Indentations Observed, Front and Back of Last Will and Testament, 2 Lifts; IR Reflectance - Ink drops out, 2 Files; IR Luminescence, Paper fibers and inks fluorescing, 1 File.
Z4JZDD	The Last Will and Testament for Stanley Olson dated on 10 November 2025 was forged by replacing the original page (1), with all its textual data, with the current page to make it appear as it is now.
ZF9Y3U	Item Q1 has been altered by substituting a new first page.
ZMA9B9	Therefore, page 1 of the document was entirely replaced.
ZMAB2C	The Will has been altered. It was not printed at one time. The current page one was printed separately and was substituted for an earlier page one which had previously been stapled to the current pages 2, 3, and 4.
ZMQ8QQ	1. The Evidence Description below is clarified as follows: Exhibit 1(1-4) - Questioned notes/Last Will and Testament Exhibit 1.1 - Electrostatic Detection Device (EDD) lift from 1(1) Exhibit 1.2 - EDD lift from 1(2) Exhibit 1.3 - EDD lift from 1(3) Exhibit 1.4 - EDD lift from 1(3) Exhibit 1.5 - EDD lift from 1(4) 2. Exhibit 1(1-4) was processed for the presence of indented writing impressions. Some decipherable indented writing impressions were observed on Exhibit 1(2-4). No decipherable indented writing impressions were observed on Exhibit 1(1). EDD lifts, Exhibits 1.1- 1.5 were created from Exhibit 1 (1-4) and will be returned with the original evidence. 3. A visual and microscopic examination was conducted on Exhibit 1(1-4). In addition, multiple observations utilizing various lighting techniques indicate that Exhibit 1(1) was added separately and strongly supports that Exhibit 1(1-4) has been altered.
ZN7RDA	Based on differences observed between Item 1 (Item Q1) page 1 and Item 1 (Item Q1) pages 2 through 4 using physical and indented writing exams, it was determined that the Item 1 (Item Q1) document was altered. The following observations were noted on Item 1 (Item Q1): Signatures from pages 3 and 4 were not observed indented on page 1 but were observed indented on page 2 using side light and electrostatic processing. An additional set of staple holes were observed on pages 2 through 4 but were absent from page 1. A crease/fold on the stapled corners was observed on pages 2 through 4 but was absent from page 1. "All" alignment on far right of page 1 is out of alignment with the rest of the writing on the right side of the page. There is a lack of serifs on "I" in paragraph beginning "I direct that my just deeds ..." on page 1.
ZRLWC6	The questioned document was altered by means of a page replacement (i.e. page 1).
ZUTEAZ	Page 1 was not initially part of the "LAST WILL AND TESTAMENT OF STANLEY OLSON", therefore, I reached the conclusion that the "LAST WILL AND TESTAMENT OF STANLEY OLSON" document has been altered.

Additional Comments

TABLE 4

WebCode	Additional Comments
2UMJ4Y	The page marked as "Page 1 of 4" is inconsistent with pages marked as "Page 2 of 4" to "Page 4 of 4" and was not part of the document at the time of its execution.
63MDN3	In the QD subject of this examination are used three different writing implements to write the three signatures (different one for each signature) but the pressure marks signature that has been written on the third sheet in name of Stanley Olson is found in the same position at the last sheet. This means that the last two pages were one above the other in the time of signature writing.
643D77	- The absence of the indented writing of the signature of the testator Stanley Olson and the signatures of the two witnesses Andrea House and Chance Steele on the first page of the questioned document Q1, confirms that this page was not stapled to the rest of the questioned document Q1 at the time it was signed. - The presence of one staple hole on the first page, compared to two staples holes on the remaining three pages (2, 3, and 4) of the questioned document Q1, indicates that the original staple was removed. The original first page was then replaced with the current one, and the document was subsequently re-stapled. - The absence of a crease on the first page, along with its presence on the remaining pages (2, 3, and 4) of the questioned document Q1, indicates that the first page was not attached to the remaining pages (2, 3, and 4) of the questioned document Q1 at the time the document was signed. All these findings prove that the questioned document Q1 has been altered by the substitution of the first page.
6P22B8	Despite applying the equipment and techniques currently available, the limited and insufficient evidence obtained made it difficult to reach a clear conclusion.
74WHXK	The scope of our laboratory accreditation does not allow us to render a conclusion on the alteration of a document. Our lab is limited to documenting evidentiary features that may be lost with subsequent latent print processing.
88RVXE	The standard business practices of the business and/or law firm that produced the Will are not known. The possibility that paper from different manufactures or reams of paper were loaded into the same paper tray during the printing of the Will cannot be ruled out. The reason for page 1 (Ex. 1-1) not being stapled to pages 2-4 when the signatures were executed is also not known.
8BTUBT	1. The document in question marked as "Q1a" (page 1) was not printed at one time with the documents marked as "Q1b" to "Q1d" (page 2 to page 4) and executed during a single signing ceremony, it was added after the signing ceremony was done, therefore the "Will" was altered.
8G2DFC	No significant differences in printing characteristics were identified in microscopic examination between the individual pages of the document
8X7RQE	Our conclusion based on the number of punching and staple marks observed on the first page and on pages 2-4, it is concluded that the first page of the document was replaced.
ATJRLJ	The analysis using VSC and ESDA confirms a substitution of page 1 in the document titled 'Last Will' executed on November 10, 2025, by Stanley Olson. These findings establish a physical discrepancy with the rest of the instrument, validating the initial indications of manipulation.
AXZWKE	Visually (microscopic examination), no differences in toner deposits were observed on the respective pages. We assume that the new page 1 was produced on the original printer (or same brand, same type of toner) using a different type of paper.
B2WZP7	If this were an actual case, I would request additional information, such as, did the client disassemble the document to make copies? How was the questioned document received by the parties? Was the document unstapled, stapled and sent to the party questioning the document wherein it was they re-stapled. This line of questioning would possibly reveal the chain of custody, but not explain why the first page was stapled with half the amount of staple holes. In addition, on page one, a line of ink transfer is identified on the bottom right side of the page. Like a 'scuff' mark where the pen accidentally marked the page. As questioned document examiners we opine in levels of probability, not a certainty since Daubert. Therefore my opinion is the document was probably altered by adding a different first page.

TABLE 4

WebCode	Additional Comments
BB26GM	1) The results are opinions and interpretations formed using accepted scientific and professional practices. 2) Digital images of the evidence are retained in Criminal Investigative Division. 3) In a toner examination, common source association means that exhibits are associated through observed class characteristics and are chemically indistinguishable from one another at that level of analysis. The exhibits cannot be excluded from one another. Commonalities may include toner formulations, indicating different exhibits share a similar toner formulation and/or manufacturer. This does not imply that the exhibits are identical or share the same cartridge(s) and/or printer. 4) In a paper examination, common source association means that exhibits are associated through observed class characteristics and are chemically indistinguishable from one another at that level of analysis. The papers cannot be excluded from one another. Commonalities may include paper characteristics, such as watermark(s), texture(s), defect(s), optical brighteners and/or colorants. This does not imply that the exhibits are from the same ream of paper. 5) In the paper manufacturing process, reams of paper and other paper products can be comprised of sheets from one or more rolls of paper. Differences in paper characteristics may be present in individual sheets from the same ream or product.
DD4R8W	ADDITIONAL EXAMINATIONS Indented writing was observed on pages 2 through 4 of Item 1 (Q1) using the Electrostatic Detection Apparatus (ESDA). The ESDA lifts used to capture and retain the indented writing are considered secondary evidence and have been designated Item 2. No indented writing was observed on page 1 of Item 1 (Q1) using the ESDA. Item 1 (Q1) was prepared using a toner printing technology. This technology is commonly found on numerous brands of office machines. It should be noted that several possibly distinguishing characteristics were observed on the first page of Item 1 (Q1) which may be associated with a known office machine, if located. Additional observations and assessments have been made regarding the submitted item and recorded for possible future examinations.
DQN6KR	No differences were observed under IR and UV light examination across all four pages.
E3WBBJ	Scale of conclusions including levels from -4 to +4.
E9NHUT	Without the intelligence description that the document was printed at one time, and signed at one ceremony, our Lab may have given this document an inconclusive conclusion with additional supplementary observations.
EUL9PJ	This analysis concludes that the questioned document, the "Last Will and Testament of Stanley Olson," consisting of four pages, DOES SHOW SIGNS OF ALTERATION. Specifically, the number of staple holes is lower on Page 1 of 4 compared to the other pages. Furthermore, when the margins are viewed against the light, the text on Page 1 of 4 is observed to be: - Left side: extending beyond the margins of the other pages. - Right side: only the text "All" in section "Article 1" "Family Identification" significantly extends beyond the margins of the other pages. In other words, the margins are uneven. Therefore, the suspicions raised in the scenario are confirmed, as it is evident that the original Page 1 of 4 was replaced. This is because it is on this page that the data of the individuals to whom the inheritance was assigned is found, and it is precisely the page that shows the fewest holes and uneven margins compared to the rest of the pages. Given the above and the identified evidence, the alteration is confirmed, as it is a forgery of a document. This is because it is an authentic document whose original preparation has been altered, and its text has been materially falsified.
FK8JM6	Applied equipment: VSC 8000 Video Spectral Comparator (UV, IR, oblique light, transmitted light, 3D); Nikon SMZ 800 stereomicroscope; ESDA2.
GBFMY9	The scope of our laboratory accreditation does not allow us to render a conclusion on the alteration of a document. Our lab is limited to documenting evidentiary features that may be lost with subsequent latent print processing.
GL3NG4	The sheet "Page 1 of 4" of the document in question Q1 is different from the other sheets "Page 2 of 4" "Page 3 of 4" and "Page 4 of 4", taking into account the position and number of aligned holes observed in the upper left part of each of the pages, which do NOT match each other, implying that the sheet "Page 1 of 4" was replaced by another, constituting the document Testament and Last Will of Stanley Olson, dated "10th day of November, 2025," which is perceived today. The technical analysis found that sheet "Page 1 of 4" shows no alterations (erasing, scraping, insertion, chemical washing,

TABLE 4

WebCode	Additional Comments
	additions) that would have attempted to modify its original content. The text printed on pages "1 of 4", "2 of 4", "3 of 4", and "4 of 4" of document Q1 exhibits morphostructural characteristics that suggest it originated from the same printer, even though the font size and distribution are similar, and the content may be part of the original format. During the form completion process, the computer user, while executing commands and processing data, may vary or maintain the same font size and style to fit the printed text into the pre-established spaces. Therefore, in this case, a technical assessment of the printed content is not possible.
H6Q8A2	If a handwriting examination is requested on the signatures in Item Q1, pages 3 and 4, known exemplars and normal course of business writing should be submitted to conduct a comparative examination.
HLWQLX	Page 4 of 4 presents justified text, unlike the first three sheets which are unjustified; however, since a handwriting examination is not applicable in this case, page 4 of 4 is considered valid.
HUVA73	Based on the analysis of the questioned document QD: A will relating to the deceased Stanley Olson was observed, consisting of four letter-size pages, digitally printed, with pages 1 of 4, 2 of 4, 3 of 4, and 4 of 4, which contain the testamentary dispositions indicating the beneficiaries and distribution of his assets. The alteration examination method was applied in its four stages: preliminary analysis, sensory analysis, analysis with optical instruments, and video spectral comparator (VSC). Where different light sources were applied, such as grazing, oblique, incident and transmitted light, also applying lights at different wavelengths, thus managing to determine the alteration of the QD: A will relating to the deceased Stanley Olson is observed, consisting of four letter-size sheets, they were not printed at the same time, so the first page 1 of 4 of the will was changed and was not printed at the same time as the other pages numbered as 2 of 4, 3 of 4 and 4 of 4.
J3K8MA	Qualification of the opinion The opinion that there is strong evidence to show that the questioned document (Q1) has been altered rests on four independent and mutually corroborating indicators, each pointing to the same conclusion. First, the staple pin hole pattern shows multiple staple pin holes on pages 2 of 4, 3 of 4, and 4 of 4, but only a single pair of pin holes on page 1 of 4. This means page 1 of 4 was not originally stapled to the other pages and was inserted later. Second, the paper mass difference confirms this finding. Page 1 of 4 is significantly lighter than the remaining pages, which is consistent with a different paper stock. Third, the disparity in IR luminescence reveals that page 1 of 4 reacts differently to infrared light than pages 2 of 4, 3 of 4, and 4 of 4. This proves that page 1 of 4 is made of a different paper stock. Fourth, the uniform inkjet characteristics found on all pages show that the same printing technology was used. While this does not prove use of the same printer or different printer, it supports the hypothesis that page 1 of 4 was printed separately and then substituted. All four indicators are independent, yet all point to the same conclusion of page substitution of page 1 of 4, the likelihood that an unaltered document would show these combined anomalies is extremely low. Therefore, the opinion of alteration is strongly supported.
KC2BAY	The alteration occurred by way of the substitution of Page 1. The package was printed, stapled, then signed and at a later time, the staple was carefully removed and a new Page 1 was stapled to Pages 2 to 4. The font dimensions of the paragraph under Article I is not consistent with the rest of the body text in the entire document. Since Page 1 showed different optical properties, it was from a different composition of paper than Pages 2 to 4, but possibly printed on the same printer since the toner morphology was similar, or another printer with the same characteristics. While the scenario provided states that "the document was printed in its entirety at one time, and executed during a single signing ceremony", it is assumed that this statement is exact to the word, and does not allow for a re-printing of a page as part of a single "event".
KC7R8X	Nice, basic proficiency examination.
KUZQ86	The scope of our laboratory accreditation does not allow us to render a conclusion on the alteration of a document. Our lab is limited to documenting evidentiary features that may be lost with subsequent latent print processing.
KYFV9K	In our unit we use a balanced 9-point document conclusion scale. The conclusion used in this case is the strongest one we have on the negative side (that the document is not genuine). We have chosen to

TABLE 4

WebCode	Additional Comments
	disregard the fact that page 4 has justified margins, which are not present on the other pages. This may be due to an error in the preparation of the test material or the copying of standard text from a master document into the present document. No other findings suggest that page 4 has been substituted.
LDVDF	1. The document in question marked as "Q1" has only two staple holes whereas the documents in question marked as "Q2" to "Q4" has more than two staple holes, 2. The document in question marked as "Q1" has no indented signature. 3. The document in question marked as "Q2" has the indented signatures that appears on the document in question marked as "Q4". 4. The document in question marked as "Q3" has the indented signatures that appears on the document in question marked as "Q4". 5. The document in question marked as "Q4" has the indented signature that appears on the document in question marked as "Q3".
LQJFWL	The inspection of the questioned document revealed several inconsistencies on page 1. The first sheet has a single perforation from the stapler, while subsequent sheets have two perforations or distorted holes. Furthermore, the margins of the printed text on page 1 do not match those of the other pages. A difference in line spacing is also observed, specifically in the phrase "TITLE II," where there is greater spacing between lines compared to the other titles in the questioned document. These findings suggest that page 1 was replaced.
MH7QVT	Since there is no method to determine whether the printed text and signatures were executed on the same or different dates, no relevant research was conducted.
NE2KR7	The text in the 1st line of Article I on page 1 was found to have a different font size from the other text in Q1. The first letter "I" in Article II on page 1 was found to have a different font style from the other text in Q1.
P67Y3K	Indented writing examinations were conducted using side-lighting and electrostatic detection. The electrostatic lifts used to visualize and retain the indented writing referenced above are considered secondary evidence and have been designated Item 2. The printing on Item 1 (Q1), pages 1 through 4, was produced using magnetic toner technology. This process may be found on numerous brand name photocopiers, laser printers and other machines. Additional observations and assessments have been made regarding the submitted item and recorded for possible future examinations.
PK3E3D	While signing the document the pages were folded over each other, thus page 2, 3 and 4 have indented signatures. Page 1 does not have indented signatures because it was later inserted to the document.
PNHNEW	The ESDA indentation lifts were digitally preserved and processed. Exhibit Q1 was digitally preserved. If a printer is located, the entire machine, including power cords and/or known samples, should be submitted for examination and comparison. If a handwriting comparison is needed, please submit twenty to twenty-five exact-text exemplars and/or comparable normal course-of-business known writing samples as within the questioned signatures, of the subject(s) and/or victim(s).
Q66LVH	Upon inspecting the questioned document with the aid of video comparison, it was determined that it presents material inconsistencies between its pages. In particular, the first page shows discrepancies compared to the other three regarding the number of holes corresponding to the document's stitching: the first page has only two holes, indicating that it was stitched only once; while the other three pages have more than four holes, which demonstrates that they have been stitched on several occasions. Additionally, the right margin of the first page differs from that of the others, a circumstance that is especially evident in the heading of Article 1, where the text extends significantly toward that margin. Similarly, differences are observed in the line spacing of the titles between the first page and the remaining pages. Consequently, these findings allow us to establish the existence of a substitutionary alteration on the first page of the document, which would have been added to replace the original page, which had been previously removed.
R7QRQY	The indented impression, the additional staples holes, and the fold in the top left corner support that Q1b, Q1c, and Q1d were stapled together before the pages were signed. Q1b was folded to the back placing Q1c on top of Q1d and Q1b when it was signed. Q1c was folded to the back, placing Q1d on top of Q1b and Q1c when it was signed. The evidence supports that pages Q1c and Q1d were signed after the Q1b, Q1c, and Q1d pages were stapled together. The evidence also supports that the these

TABLE 4

WebCode	Additional Comments
	pages were unstapled and then stapled again to include Q1a. It is unknown to me if Q1a was removed, altered, and/or replaced after Q1 was signed or if Q1a was inadvertently forgotten when Q1 was originally stapled together. However, the prior is more likely. It is unknown to me if the variation of a portion of the margin size of Q1a is intentional, accidental, or due to an alteration. However, this inconsistency is more likely due to an alteration.
RDAT9W	The evidence was examined and imaged. In the event that a handwriting examination is requested in the future, resubmission of the original questioned documents is desired. Please contact the Questioned Document Unit regarding obtaining known writing samples, if necessary.
UMDP8J	Upon examining the staple area, it was observed that: * Pages (2–4) show evidence of having been stapled twice. * The first page shows evidence of having been stapled only once. This indicates that the original first page was removed and replaced with another page, and the document was re-stapled, leaving physical evidence on pages (2–4), while only a single staple mark appears on the first page
UUCCWY	Page 1 of the document is the only page that did not contain indentations of the signatures which were written on page 3 & 4, indicating page 1 was not underneath pages 3 & 4 at the time of the signing. This may have been due to page 1 being substituted or the document not being stapled together before the document was signed. Page 1 of the document is the only page containing 1 set of staple holes, indicating the page has been substituted after the document was signed. As pages 2 to 4 contain 2 sets of staple holes, indicating a staple was removed at some point and then stapled again.
VAJQV8	the extra set of staple marks and indentations on pages 2 to 4, while page 1 only has one set of staples and no indented signatures support that the document was altered.
W2MAJ9	All the physical examinations were conducted which includes IR, UV, microscopy, macroscopy, visual examination, spectroscopy.
WQMMPQ	The results point to the same manufacturer or device as the author of the manipulation.
XGBZZM	According to the results obtained in the aforementioned tests, there are indications of alteration to the document in question (will), specifically: Page 1 of 4, has been found to be an addition, as demonstrated by the difference in the number of holes (fewer on page 1 of 4); folds located in the upper left corner of each page (absence of the fold mark on page 1 of 4); and the presence of creases from the pressure of the signatures on the pages (absence of creases on page 1 of 4).
XW86KD	All pages of the document are printed on the same printer, as the printed text contains identical private identification marks (defects). Pages 2,3, and 4 have holes in the upper part of the stapler that correspond to the staples that were previously attached to the document. These free holes are not present on the first page of the same document. This signifies that the document has been opened or had been opened and that the first page has been replaced.
Y8YBRG	The indented signatures deciphered on "Page 1 of 4" were identical to the handwritten signatures on Page 3 of 4" and "Page 4 of 4" respectively in design, structural, size, spacing and alignment.
YKP62P	Page 1 is also different paper stock to the other pages. The first line of Article I, naming the Testator's children, is a larger font size and has different margining from the rest of the text in the Will.
YR8DR8	ADDITIONAL CASE NOTATIONS: DIFFERENCES OBSERVED: The top sheet of paper reacted differently under the ultraviolet (UV) light source within the Video Spectral Comparator (VSC) than pages 2 through 4, with the top sheet fluorescing more brightly. The top sheet contained one staple and its corresponding pair of staple holes, while pages 2 through 4 contained the same staple and corresponding staple holes along with an additional set of empty staple holes. The top sheet did not contain any folds in the upper left corner, whereas pages 2 through 4 each contained a small fold in the upper left corner. The left margin on the top sheet was positioned slightly farther to the right than the left margins present on pages 2 through 4. SIMILARITIES OBSERVED: The Stanley Olson signature was produced with black ballpoint ink; the Chance signature was also produced with black ballpoint ink; and the Andrea signature was produced with blue ballpoint ink. An indented impression corresponding to the Stanley Olson signature was present on the front side of page 4. Examinations of the machine-printed text revealed the font appearing on page 1 was consistent with the font appearing on pages 2 through 4.

TABLE 4

WebCode	Additional Comments
YW28P9	Further information regarding whether or not the four pages of the Will were stapled together when the signatures were written on pages 3 and 4 Will, would assist in determining if page 1 has been substituted and the Will altered.
Z2CK6L	If a handwriting comparison is needed, please submit fifteen to twenty exact-text exemplars and/or comparable normal course-of-business known signatures, as within the questioned entries, of Stanley Olson, Andrea House, and Chance Steele. If a printer is located, the entire machine, including power cords and/or known samples, should be submitted for examination and comparison. Exhibit Q1 and the eight original ESDA indentation lifts were digitally preserved. Exhibits Q1(3)a and Q1(4)a were digitally processed.
Z2CMUQ	The scope of our laboratory accredited does not allow us to render a conclusion on the alteration of a document. Our lab is limited to documenting evidentiary features that may be lost with subsequent latent print processing.
Z4JZDD	1- The Last Will and Testament was examined using a VSC8000 device, we found in side light there are fold marks at the point where pages (2-3-4) are bound, and there is no similar marks on page (1). 2- There is no discrepancy in the contents of the Last Will and Testament for Stanley Olson, as the deceased stipulated in the first clause (identification of family) that the estate be distributed only among his five sons, excluding other. He did not mention the names listed in the third clause (Disposition of property) as being among the family members entitled to receive a share of the estate. 3- In the Last Will and Testament, we find that the spacing between the ends of the paragraphs and the beginning of the heading on page (1) is inconsistent, while it is consistent on the remaining pages (2-3-4).
ZMA9B9	Therefore, page 1 of the document was entirely replaced.
ZN7RDA	The electrostatic lifts, used to capture the indented signatures observed on Item 1 (Item Q1) pages 2 through 4 are considered secondary evidence and have been designated as Item 2. No other indented writing was observed on Item 1 (Item Q1) pages 1 through 4 using side light and electrostatic processing. Additional assessments and observations have been made regarding the submitted item and are recorded for possible future comparison.

-End of Report-
(Appendix may follow)

Test No. 26-5211: Questioned Documents Examination

DATA MUST BE SUBMITTED BY **May 11, 2026, 11:59 p.m. EDT** TO BE INCLUDED IN THE REPORT

Participant Code: U1234A

WebCode: P4UDBX

The Accreditation Release section can be accessed by using the "Continue to Final Submission" button above. This information can be entered at any time prior to submitting to CTS.

Scenario:

A questioned Last Will and Testament for Stanley Olson was submitted for probate following his death. Stanley Olson's daughter, Jasmine Olson, has reason to believe the will may have been fraudulently altered. Jasmine Olson maintains that the submitted document does not reflect her father's true intentions as the will allocates a portion of the estate to an individual who she believes was not previously designated to receive any inheritance. The witnesses for the will state that the document was printed in its entirety at one time, and executed during a single signing ceremony. Investigators have submitted the questioned will for examination to determine whether any alterations are present that may support these concerns.

Please Note: Handwriting examination and comparison are not part of this proficiency test.

Items Submitted (Sample Pack QD):

Item Q1: Four-page Last Will and Testament concerning decedent Stanley Olson

1.) Based on the findings of your examination, to what degree can it be confirmed or refuted that the questioned document has been altered?

(Select from the following list. If the wording below differs from the normal wording of your conclusions adapt these conclusions as best you can and use your preferred wording for question 3.)

- A. The questioned document HAS BEEN ALTERED.
- B. The questioned document HAS PROBABLY BEEN ALTERED.
- C. CANNOT DETERMINE whether or not the questioned document has been altered.
- D. The questioned document HAS PROBABLY NOT BEEN ALTERED.
- E. The questioned document HAS NOT BEEN ALTERED.

Q1

2.) Methods and techniques utilized. **Please briefly indicate the observations made from each method/technique utilized.**

Please note: The list of methods/techniques provided in the dropdown list is not an all inclusive list and should not be used to determine what methods/techniques should be performed. Methods/techniques not on this list may be utilized.

***Note:** Please use appropriate punctuation to indicate the end of sentences, sections, and statements in the free-form space below. Extra spacing and returns used for separation within your text will not transfer and may cause your information to be illegible in the Summary Report. The use of lists and tabular formats to deliver information is also cautioned against, as these do not transfer.*

3.) What would be the wording of the Conclusions in your report?

Note: Please use appropriate punctuation to indicate the end of sentences, sections, and statements in the free-form space below. Extra spacing and returns used for separation within your text will not transfer and may cause your information to be illegible in the Summary Report. The use of lists and tabular formats to deliver information is also cautioned against, as these do not transfer.

4.) Additional Comments

Note: Please use appropriate punctuation to indicate the end of sentences, sections, and statements in the free-form space below. Extra spacing and returns used for separation within your text will not transfer and may cause your information to be illegible in the Summary Report. The use of lists and tabular formats to deliver information is also cautioned against, as these do not transfer.

RELEASE OF DATA TO ACCREDITATION BODIES

The Accreditation Release is accessed by pressing the "Continue to Final Submission" button online and can be completed at any time prior to submission to CTS.

CTS submits external proficiency test data directly to ANAB and/or A2LA. Please select one of the following statements to ensure your data is handled appropriately.

- ☐ This participant's data is intended for submission to ANAB and/or A2LA. (Accreditation Release section below must be completed.)
- ☐ This participant's data is **not** intended for submission to ANAB and/or A2LA.

Have the laboratory's designated individual complete the following steps
only if your laboratory is accredited in this testing/calibration discipline
by one or more of the following Accreditation Bodies.

Step 1: Provide the applicable Accreditation Certificate Number(s) for your laboratory.

ANAB Certificate No.

A2LA Certificate No.

Step 2: Complete the Laboratory Identifying Information in its entirety.

Authorized Contact Person and Title

Laboratory Name

Location (City/State)