



# Questioned Documents Examination

## Test No. 19-521 Summary Report

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Each sample set consisted of a three-page lease agreement document (Q1). Participants were requested to analyze the questioned lease agreement to determine if the document demonstrated evidence of alteration following its completion by the lessee. Data were returned from 170 participants and are compiled into the following tables:

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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 set contained one three-page residential lease contract between renter James Dunn and leasing agent Samantha Haan, Q1. Participants were asked to analyze the questioned document to determine if there was evidence of alteration to the document.

### **SAMPLE PREPARATION -**

The three page document was produced on Up & Up brand 20 lb. printer paper using a Hewlett-Packard LaserJet Enterprise M506 laser printer, then joined with a paper clip in the upper left-hand corner. An additional page 2 was produced with the same paper on the same laser printer and was maintained separately. Both writing contributors (J. Dunn and S. Haan) completed their respective fields on each document page using a Papermate Inkjoy black ballpoint pen, removing each page from the paper-clipped grouping following its completion. Writer S. Haan then completed all fields on the new page 2 using a Pilot Acroball black ballpoint pen. This page replaced the previously completed page 2 in the original document, and the new bundle was stapled together. The original page 2 was discarded.

The writer of the J. Dunn fields is a 30-year old right-handed male, and the writer of the Pinecrest Village/S. Haan fields is a 33-year old left-handed female.

### **SAMPLE SET ASSEMBLY -**

After visual quality reviews were complete, each item was packed between chipboard into a pre-labeled sample set envelope. Following predistribution testing, all sample sets were sealed and initialed with "CTS".

### **VERIFICATION -**

Predistribution examiners determined that there was evidence that the document had been altered by means of a substitution of page 2. This was supported by the following observations: differing optical properties of the pen ink on page 2 as compared to pages 1 and 3; indented writing within page 3 that is incongruent with the writing on page 2; a lack of page 1 indented writing and paper clip indentations on page 2; and handwriting characteristic differences in the "JD" initials on page 2 as compared to pages 1 and 3 (limited due to number of exemplars to compare).

## **Summary Comments**

Each sample set consisted of a three-page lease agreement document (Q1). The tenant alleges several fees on the lease were altered following his completion of the lease. The page 2 of Q1 filled out by the lessee was replaced with an altered page 2 filled out by the leasing office. Pages 1 and 3 were not altered. (Refer to the Manufacturer's Information for preparation details).

For question 1, "Based on the findings of your examination, to what degree can it be confirmed or refuted that the lease agreement was altered?" 98.2% of responding participants reported the lease was altered ("A", 162 participants) or was probably altered ("B", 5 participants). Several participants noted they were only able to say the document was "probably altered" ("B") because they did not have James Dunn's copy of the lease. One participant could not determine if the lease was altered ("C"). Two participants reported the lease was not altered ("E", one participant) or was probably not altered ("D", one participant).

A majority of participants provided the following observations to support their conclusion that the lease had been altered following its completion: participants noted Page 3 contained handwriting impressions from Page 1 and the original Page 2 but did not contain impressions from the replacement Page 2. Some also noted Page 2 did not contain handwriting impressions from Page 1. Many participants noted that the pet deposit, rent, and parking fee were higher on the replacement Page 2 than they were on the original Page 2. Some participants noted the utilities fee on Page 1 had not been altered, as alleged. Participants also noted that, under an alternative light source, the optical properties of the handwritten ink on page 2 were different than those of the handwritten ink on Pages 1 and 3. Many noted pages 1 and 3 shared a common ink source. Several participants observed Page 2 had different optical properties than Page 1 and Page 3 under an alternative light source while other participants observed similar optical properties in all three pages. It was also commonly noted the impression in the upper left-hand corner of pages 1 and 3, possibly made by a paperclip, was not seen in Page 2. Handwriting differences were often noted, however the small amount of handwriting on the document limited this analysis.

Across the 170 responding participants, 710 methods of analysis were reported in total. Some of these methods were reported more than once by a single participant, indicating the technique was possibly performed more than once to examine different features of the document. The most commonly reported technique utilized was Video Spectral Comparator (VSC), reported 137 times; it was frequently used for determining optical properties of the document. Other frequently reported methods include ESDA (110) for indented writing detection, Visual Examination (81), and Microscopic Examination (64). The methods listed in the response summary are the preloaded options for selection via the CTS Portal and do not reflect all answers provided by participants.

# Examination Results

*Based on the findings of your examination, to what degree can it be confirmed or refuted that the lease agreement was altered?*

TABLE 1

WebCode	Q1	WebCode	Q1	WebCode	Q1
2MALFC	A	83QW4P	A	D2T2TK	A
2MFZKP	A	8Q3L3D	A	DA8JFF	A
2N9MNN	A	8QUHRH	A	DGHEY Y	A
2TLYTT	A	8YE3AE	A	DXR2TM	A
3DQU3B	A	92GZNU	A	DZJMEF	A
3DUAL4	A	94DJKU	A	EEM3K4	A
3JY9U9	A	97BUH8	A	EKQ7DN	A
3YRRMP	B	9A7VBA	A	EMCYYQ	A
43WLJF	A	9AC6HV	A	EZKTGV	A
4MPPXL	E	9BT8DB	A	F3Y7JD	A
4N62N4	A	9MG9QP	A	F8KARZ	A
4N69HJ	B	AA6B88	A	FCQ9Z6	A
4NJNX6	A	AAFTRM	A	FMJAV6	A
4PYW2E	A	AWWRAC	A	FXVLWX	A
4V4NEH	A	B2AR74	A	GBAFE2	A
4VNG6U	A	B9Q4K6	A	GGTA2A	A
6CKRYY	A	BAYJQB	A	GHW2VZ	A
6EV46T	A	BGJNF6	B	GUR8NY	A
72J7MA	A	BJNDHD	C	H7K88W	A
77EZLW	A	BVR7WE	A	H7ZBPM	A
7EQ7AM	A	C3BVWF	A	H8H9F9	A
7HMR2Q	A	CN2A99	A	HDGXBC	A
7KMKCY	A	CREA6Z	A	HJ327L	A
7UG738	A	CRUFH6	A	HKWPMV	A
7XFKNC	A	CV72U8	A	HNPELX	A

TABLE 1

WebCode	Q1	WebCode	Q1	WebCode	Q1
J3U8CQ	A	NKWMER	A	U6M34G	A
J8YN9G	A	NWVBGM	A	U8PPWK	A
JMGYCM	A	NXJYQ3	A	ULA8N4	A
JQQ2ET	A	PBNCMT	A	UPEQYH	A
JVYAPN	A	PBVLX9	A	UQM4FK	A
JXYF6U	B	PJBAQP	A	UQWQE9	A
JZ6ZRU	A	PNNDX9	A	UWR3PN	A
K2778A	A	PW6R3Y	A	UX2WKN	A
K3JH4U	A	Q2DN8L	A	UYVK2Y	A
KBGP9	A	Q8WCLL	A	V2X3DY	A
KE7YFQ	A	QG7D4H	A	V3CGTL	A
L6QWAF	A	QHDDMD	A	V8LMHZ	A
LCMARE	A	QU7X46	A	VCKUCB	A
LEFNUM	A	QUWYMR	A	VDMFFK	A
LFABAX	A	RBUBFB	A	VGWWX7	A
LTNY3Q	A	RHEWEY	A	VN3K93	A
M8DVZJ	A	RKWH4	A	VPPAVK	A
MAJ66A	A	RRW8DZ	A	W2CQEQ	A
ME7PVE	A	RUCTMR	A	W9CBE2	A
ML82RC	A	T2XRE8	A	WBWNQZ	A
MMVEAU	D	T3G69N	A	WNELMN	A
MTC3RV	A	T7XCV3	A	WPDLV2	A
MUPJZ3	A	T8RZBC	B	WWL8JN	A
MXK2N6	A	TAYFMP	A	X69YV7	A
MYL8GA	A	TCB49A	A	X9TLUK	A
N38FJP	A	TVGMWW	A	X9WYLN	A
NF4EER	A	TXKWRJ	A	XX3UTW	A
NKFLHH	A	U3GHFG	A	XZFREJ	A

TABLE 1

WebCode	Q1	WebCode	Q1	WebCode	Q1
YATTBM	A				
YDHHUV	A				
YKKJH6	A				
YLE7XE	A				
YZVDMY	A				
Z6GQ2R	A				
Z89MPL	A				
ZBQXPC	A				
ZLPH6H	A				
ZQK9BU	A				
ZRFWR4	A				

Response Summary - Q1		Total Participants: 170
<p><i>Based on the findings of your examination, to what degree can it be confirmed or refuted that the lease agreement was altered?</i></p>		
Response	Q1	
A	162	<p><b>Response Key:</b></p> <p>A. The questioned agreement WAS ALTERED.                      B. The questioned agreement WAS PROBABLY ALTERED.                      C. CANNOT DETERMINE whether or not the questioned agreement was altered.                      D. The questioned agreement WAS PROBABLY NOT ALTERED.                      E. The questioned agreement WAS NOT ALTERED.</p>
B	5	
C	1	
D	1	
E	1	

# Methods and Observations

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

TABLE 2

WebCode	Methods/Techniques	Observations
2MALFC	Magnification	At the analysis including the contract, through direct observation and optical instrumentation Magnifier 10 X, all the texts manuscriturales that are part of this, any kind of alteration was not found either by the method suppressive or additive
	Video Spectral Comparator (VSC)	With documents VSC-8000 comparator, described each of the leaves of the disputed contract to the influence of the ultraviolet light at 365 nm., and there was no reaction in the manuscripts of any kind.
	Video Spectral Comparator (VSC)	With documents VSC-8000 comparator, described each of the leaves of the contract questioned the influence of infrared light from 645 nm range up to 925 nm, finding that in all these ranges the inks that make part of the manuscripts of the leaves us. 1 and 3 keep the same behavior and never disappear, unlike sheet No.2 of the contract which the inks which makes part of the texts manuscriturales disappear.
2MFZKP	Macroscopic Examination	(1) Examination by side-lighting shows a paperclip indentation at top left in paper for pages 1 and 3; no similar indentation is visible on page 2. (2) Pages 1-3 are printed with a dry-toner process. The background watermark on each page is also printed by a dry-toner process. All HW entries were made with a black ballpoint pen, as confirmed by indentations observed in the ink writing lines and indentations observed with side-lighting on the back of each page.(3)The Resident's signature and initials on pages 1 and 3 were made with a black ink that is visually darker than the black ink entries attributable to the Owner/Agent on those pages. No differences in inks were detected by non-destructive visual examinations between the handwritten entries by the Resident and Owner/Agent on page 2.
	Macroscopic Examination	"JD" initials on page 2: appear to have a partial retrace on the left side of the "J" horizontal cap stroke. There is no corresponding retrace among the "JD" initials on pages 1 and 3. Further, the "J" letterforms have a terminal tic/drag to the right on "JD" initials on pages 1 and 3; this feature is absent in the "J" letterforms on page 2. These differences support a limited indication finding that the writer of the "JD" initials on pages 1 and 3 may not have written the "JD" initials on page 2. The limited features in these initials entries was the primary limitation in this comparison examination of the initials entries on each page.
	Infrared Light	Inks on page 2 were shown to be different from the inks on pages 1 and 3, based on their response when examined with a Foster & Freeman VSC device. Using spot filter IRL @480nm with camera filter 645nm settings, handwriting inks on pages 1 and 3 reflected light (were light in appearance), while inks on page 2 examined at the same IRL settings, absorbed the light (were dark). 5. Examination by ESDA revealed:

TABLE 2

WebCode	Methods/Techniques	Observations
ESDA		Indentation examination with a Foster & Freeman ESDA revealed the following: (A) No indentations were observed on Page 2 that corresponded to visible ink entries on Pages 1 & 3. (B) Page 3 has indentations corresponding to some of the handwritten entries visible on Page 1. The indentations on page 3 which correspond in position to visible entries on Page 2, show differences in letterforms and some content. Page 3 indentations show a "100" instead of the corresponding visible ink entry "200" on the second line of page 2; also, indentations on page 3 show "35" instead of the corresponding "50" ink entry on page. Additional indentations were developed on page 3 that were fragmentary and insufficient for interpretation
Lab color mode conversion with Photoshop software		RGB scans were made of pages 1-3 at 660 spi. Digital files for pages 1-3 were processed by conversion to Lab Color Mode (LCM). LCM_b shows Page 2 handwritten black ink entries are in a darker/different ink than the entries on pages 1 and 3.
2N9MNN	Visual Examination	The questioned document, designated Q1(1-3) is a three-page computer-generated document, which also bears black-ink handwritten entries on each page. The paper is 8.5 x 11 inches. The paper is white in color. The paper is consistent in appearance with 20lb basis weight copier/printer paper. There are no watermarks or other distinctive features apparent in the paper. There is a background image on each page. The pages are stapled together in the upper left corner. There are no other staple holes on the paper. There was no evidence that the staple had been removed and reinserted.
Macroscopic/Microscopic Examination		Q(1-3) was examined with a stereo-binocular microscope with 10x oculars, a 1x objective, a .7 to 4.5 zoom range (magnification 7x to 45x). The paper is consistent in morphology on each page. The computer text and background image were printed using black electrostatic toner. The toner morphology is consistent on each page. The ink entries were all made using black ballpoint pen ink(s).
Video Spectral Comparator (VSC)		Infrared Reflectance (IRR): Using a range of longpass filters from 645nm to 715nm, the writing ink on the first and third pages will drop out when examined using the IRR technique. The second page does not drop to IRR. Infrared Luminescence (IRL): Using a range of longpass filters from 645nm to 780nm, and the spot lamp filter of 485nm-590nm, the writing ink on the first and third pages has IRL. The writing ink on the second page (Q1(2)) does not have IRL. Ultraviolet Fluorescence (UVF) examinations: Q1(1-3) was examination using UV light at 254nm, 312nm, 365nm, and 365nm (transmitted). The documents were also examined using each of these wavelengths and set to "Blue Component". The examination disclosed that Q1(1) and Q1(3) have similar UVF, while Q1(2) has different UVF. Oblique (side) Lighting: The side lighting feature of the VSC was used to image the paper clip impressions on Q1(1) and Q1(3) and the absence of an impression on Q1(2).
Ultraviolet Light		The paper was examined using a handheld UVF wand (Model UVL-56 Black-Ray Lamp, long wave UV, 366 nm). The 1st and 3rd pages have similar UVF. The 2nd page has a different UVF from the 1st and 3rd pages.

TABLE 2

WebCode	Methods/Techniques	Observations
	ESDA	Lift 1, Q1(1) – No handwriting indentations developed. A paper clip impression was developed. Lift 1, Q1(2) – No handwriting indentations developed. No paper clip impressions developed. Lift 1, Q1(3) – Handwriting indentations developed. A paper clip impression was developed. Lift 2, Q1(3) – Handwriting indentations developed. A paper clip impression was developed. Lift 3, Q1(3) – Processed on back of document. Handwriting indentations developed. Paper clip impression developed as an inverse image. The examination of Q1(3) disclosed that it bears various indentations from Q1(1). No indentations from Q1(2) were developed on Q1(3). Excluding various handwriting impressions from Q1(1), the developed impressions on Q1(3) were: Eight “JD” initial impressions. These impressions are in similar positions as those on Q1(2), but were not caused by the writing on Q1(2). The initials are similar in general formation to those on Q1(1) and Q1(3), but not those on Q1(2). An impression of “100” in a similar position as the “200” in paragraph 7 on Q1(2). An impression of “25” in a similar position as the “50” in paragraph 7 on Q1(2). An impression of “#6854” in a similar position as the “#6854” in paragraph 8 on Q1(2), but it was not made by the same instance of writing as the entry on Q1(2). An impression of “20” in a similar position as the “30” in paragraph 8 on Q1(2).
	Oblique Light	Q1(1-3) was examined using oblique (side) lighting. Impressions consistent with impressions made by a paper clip were observed on the first and third pages on the area of the paper near the upper left corner. Similar impressions were not observed on the second page (also see VSC examinations). Handwriting indentations were observed on the third page of the document. None were observed on the first and second pages. The indentations were not deciphered using this examination (see ESDA examinations). Indentations consistent with machine transport markings, were observed on each page. The markings could have been placed on the paper during the manufacturing process or by the printer that printed Q1(1-3).
	Handwriting Examination	The “JD” initials on Q1(1-3) were compared. Significant similarities were found between the JD initials on Q1(1) and Q1(3). Significant dissimilarities were found between the JD initials on Q1(1,3) and those on Q1(2). These findings form the basis for the following opinions. There same writer probably wrote the “JD” initials on Q1(1) and Q1(3). A different writer probably wrote the initials on Q1(2). The primary limiting factor was the small amount of writing in each set of initials.
	Transmitted Light	Q1(1-3) was examined on a transmitted light box. No differences in paper morphology were observed. No distinguishing features were noted.
	Overlays	Used in confirming differences between JP initials on page 2 and the JP initials developed during the ESDA processing.
2TLYTT	Video Spectral Comparator (VSC) ESDA	1. Infrared, writings with different ink. 2. Tangential lighting, markings of paper holders, paper clip on sheets #1 and #3, as opposed to sheet #2. Revealed writing on sheet #3 does not match sheet #2.
3DQU3B	Visual Examination  Magnification	Preliminary examinations of the submitted document reveal Indented marks (clip type) on first and third page.  Viewing by stereo-microscope reveal subtle differences within the questioned material such as a slight change in hue ink differentiation of ball-point pen.

TABLE 2

WebCode	Methods/Techniques	Observations
	Video Spectral Comparator (VSC) ESDA	Using infrared, reveal an ink differentiation of ball-point pen on the second page. the exam reveals Indented writing or marks on third page; this is not being in agreement with what appears on the second page of the document.
3DUAL4	Macroscopic/Microscopic Examination  Video Spectral Comparator (VSC)  ESDA  Machine-created impressions, common source determination	The machine-generated entries on Exhibits Q1(1)a, Q1(2)a, and Q1(3)a were produced using black toner printing technology. The questioned handwritten entries on Exhibits Q1(1)a, Q1(2)a, and Q1(3)a were produced with black ballpoint ink. No font differences were observed between Exhibits Q1(1)a, Q1(2)a, and Q1(3)a.  Ink differences between the questioned handwritten entries on Exhibit Q1(2)a and the questioned handwritten entries on Exhibits Q1(1)a and Q1(3)a were observed. Differences in the paper were also observed between Exhibit Q1(2)(a and b) and Exhibits Q1(1)(a and b) and Q1(3)(a and b).  Exhibits Q1(1)(a and b), Q1(2)(a and b), and Q1(3)(a and b) were examined for the presence of indented handwriting and/or machine-created impressions using the Electrostatic Detection Apparatus (ESDA). Handwriting indentations were observed on Exhibits Q1(1)b, Q1(2)b, and Q1(3)(a and b). No handwriting indentations were observed on Exhibits Q1(1)a and Q1(2)a.  Additionally, machine-created impressions were observed on Exhibits Q1(1)(a and b), Q1(2)(a and b), and Q1(3)(a and b). The ESDA lifts created from Exhibits Q1(1)(a and b), Q1(2)(a and b), and Q1(3)(a and b) were compared. These machine-generated impressions were of a similar pattern and design. However, additional machine-created impressions were observed on Exhibit Q1(2)(a). Therefore, Exhibits Q1(1)(a and b) and Q1(3)(a and b) probably originated from a common source ; however due to an insufficient amount of identifying characteristics and/or printing defects, the evidence falls short of that necessary to support a conclusive opinion. Exhibit Q1(2)(a and b) could neither be identified, nor eliminated as originating from the same common source as Exhibits Q1(1)(a and b) and Q1(3)(a and b) due to the presence of additional machine-created impressions and an insufficient amount of identifying characteristics and/or printing defects.
	Overlays	Using a digital overlay technique, the handwriting indentations observed on Exhibits Q1(1)b were sourced to the handwriting on Exhibit Q1(1)a. The handwriting indentations observed on Exhibit Q1(2)b were sourced to the handwriting on Exhibit Q1(2)a. Sourced and unsourced handwriting indentations were observed on Exhibits Q1(3)(a and b). The sourced handwriting indentations observed on Exhibit Q1(3)a were from the handwriting on Exhibit Q1(1)a. The sourced handwriting indentations observed on Exhibit Q1(3)b were from the handwriting on Exhibit Q1(1)a and Q1(3)a. The unsourced handwriting indentations were of handwriting entries that differ from the handwriting present on Exhibit Q1(2)a.
	Oblique Light	Furthermore, a paperclip-like impression was observed on Exhibits Q1(1)(a and b) and Q1(3)(a and b). No paperclip-like impressions were observed on Exhibit Q1(2)(a and b). Please see the attached images for details. [Attachment not provided by participant]
	Handwriting Examination	The handwriting on Exhibits Q1(1)a, Q1(2)a, and Q1(3)a was examined visually. The handwriting appears to be naturally written and may contain a sufficient amount of characteristics to be compared with submitted known writing.

TABLE 2

WebCode	Methods/Techniques	Observations
3JY9U9	Macroscopic/Microscopic Examination	All three pages have been printed with a electrophotographic device. All handwriting and initials have been executed with a black ballpoint pen ink. The striation are different for page 2 than page 1 and 3. Also the direction of the stroke for the bar on the J is different for page 2. It goes from right to left on page 2 and from left to right on page 1 and 3. A paper clip was found on the questioned agreement, it strongly indent on page 1 and 3 and not on page 2.
	Magneto optical comparator from Regula	The three pages have been printed with an electrophotographic device that uses magnetic toner
	Video Spectral Comparator (VSC)	The optical properties of the black ballpoint pen ink on page 2 is different that the one on page 1 and 3 which are similar.
	ESDA	There are no indentation on page 1 and 2. On page 3, there are indentation that correspond to handwriting and initial on page 1. There are also indentation that correspond in position to a page 2 of the agreement that we do not have. The amounts are also different from the page 2 we have in the questioned agreement.
3YRRMP	Macroscopic/Microscopic Examination	Different pen was likely used for "JD" initials found on page 2 when compared against pages 1 and 3.
	Ruler	Size/height of "JD" initials on page 2 is different than on pages 1 and 3.
43WLJF	Visual Examination	Examine the questioned was found the paper clip marks at the left top on page 1 and page 3 but was not found on page 2
	Video Spectral Comparator (VSC)	1. Infrared Luminescence -Examine the questioned was found the writing ink have fluorescence affects on page 1 and page 3 but don't have fluorescence affects at all on page 2. 2. Oblique lighting - Examine the questioned was found the same position of the paper clip marks at the left top on page 1 and page 3 but was not found on page 2
	Magnification	Altered handwriting examination : handwriting alteration was not found.
4MPPXL	Visual Examination	Examination of font, leading and kerning indicates that the document was created in a single sitting without any additions at a later time. The items in question does not appear to have any obliteration, alteration, or addition. The amounts have not been changed as suggested.
	Microscopic Examination	Ink appears to be consistent with each entry indicating the same pen was used throughout the execution of the initials, signatures, and dates.
	Handwriting Examination	All initial spots for JD are consistent with a single author.
	Overlays	Overlays indicate that the background water mark is consistent in the placement on all three pages.
4N62N4	Oblique Light	Paper clip mark present on pages 1 & 3. Not on page 2.
	ESDA	Nil indentations on pages 1 & 2. Page 1 entries indented on page 3, but not on page 2. Additional unsourced indentations on page 3. These indentations are in similar relative positions to the handwritten entries on page 2, but have differences in content.
	Video Spectral Comparator (VSC)	Entries on page 2 in different ink from entries on pages 1 & 3.

TABLE 2

WebCode	Methods/Techniques	Observations
	Microscopic Examination	Differences in ink line striations between Agent's entries, signature and associated date and the Resident's initials, signature and associated date on pages 1 & 3. This pattern of completion was not observed on page 2. All of the pre-printed entries on the document have been produced using a dry-toner electrostatic printing process.
	Handwriting Examination	Consistent subtle constructional differences were observed between the Resident's initials on pages 1 & 3 and the Resident's initials on page 2.
4N69HJ	Infrared Light	Using the IR light on the MiScope, the ink responded differently on page 2 when compared to page 1 and page 3. Therefore, there was discrimination of the ink between page 2 and the other pages.
	Indented Writing	Using the QDX430, I observed impressions on page 3. The impressions were in the same placement as the handwriting and initials on page 2 as required by the agreement. However, the impressions on page 3 did not agree with the handwriting and initials found on page 2. Additionally, impressions from page 1 was not found on page 2.
	Handwriting Examination	When comparing the handwriting (letters and numbers) within the document, I observed the same hand filled in the body of the whole agreement. When comparing the initials written on each page, I observed that they are simple to execute making it not a difficult task to simulate.
4NJNX6	Microscopic Examination	Handwritings entries on pages 1 and 3 were written with use of similar ballpoint ink – similar ink's hue. Handwriting entries on page 2 were made with different ballpoint ink than handwriting entries on page 1 and 3 – different inks' hues.
	Video Spectral Comparator (VSC)	All sheets of paper demonstrate similar fluorescence. Ballpoints on page 1 and 3 have a different properties than ballpoint on page 2.
	Infrared Light	Handwritings entries on pages 1 and 3 were written with use of similar ballpoint ink. Handwriting entries on page 2 were made with different ballpoint ink than handwriting entries on page 1 and 3.
	Oblique Light	Paper clip's impressions were observed only on page 1 and 3.
	ESDA	On page 2 any indented writing was not revealed. On page 3 the double, indented writing was revealed.
4PYW2E	Macroscopic/Microscopic Examination	Paper clip impression observed on pages 1 & 3 but not page 2. Variation in "J" formation of majority of initials observed on page 2 compared to pages 1 & 3
	Indented Writing	Oblique lighting and ESDA used: Indented writing was observed on page 3 of Item 1 (Item Q1) which does not correspond to entries on the remaining pages of Item 1 (Item Q1). Pages 1 and 2 did not bear any indented writing from their preceding and/or following pages. No other indented writing of value was observed using side-lighting and/or the ESDA.
	Video Spectral Comparator (VSC)	VSC used with UV, reflected IR, IR luminescence: Optical differences observed for hand printed/handwritten entries on page 2 (compared to pages 1 & 3) using IR
	Transmitted Light	No watermarks observed on any pages
4V4NEH	ESDA	An ESDA examination was conducted on the front and back of the questioned exhibits in an attempt to recover any impressed writing. The Q-1(3) had impressions from the Q-1(1) yet the Q-1(2) did not. There was also a paper clip mark on only the Q-1(1) and Q-1(3) exhibits.

TABLE 2

WebCode	Methods/Techniques	Observations
	Video Spectral Comparator (VSC)	The VSC was utilized to see if there were ink differentials observed in the ink. The ink observed on the Q-1(2) performed spectrally dissimilar than the ink on the Q-1(1) and Q-1(3).
	Overlays	This examiner used overlays to make it easier to observe the impressed text that was recovered from the ESDA testing and is inconsistent with what is written in the questioned exhibit.
	Macroscopic/Microscopic Examination	This examiner observed a paper clip mark on the Q-1(1) and Q-1(3) that was not present on the Q-1(2) exhibit. It was also observed through use of the ESDA.
4VNG6U	Visual Examination	There is a mark of a paper clip in the upper part left of the first and third sheet of the contract. It does not appear on the second sheet. The function of this paper clip must be to hold the three pages of the contract. It is noted that the letters "JD" written at the end of each clause are different in the second sheet of the contract (intensity of the ink and morphology). Visual exam did not reveal any differences in the font used to create each paragraph. The staple has not been altered.
	Video Spectral Comparator (VSC)	No differences in printing characteristics were observed. The reaction of sheet 2 under ultraviolet light is slightly different from the other two.
	ESDA	Sheet 3 of the contract: there are eight indented writing marks (letters "JD"). Overlapping the sheets 2 and 3, that indented writing is in the places that correspond to the letters "JD" of the clauses (7 to 14) of the sheet 2. But that indented writing is not coincident with the initials written that now appear in sheet 2.
6CKRYY	Visual Examination	It was noted each of sheet that make up the Q1 document, to verify if the written forms and manuals are printed directly on the paper.
	Macroscopic/Microscopic Examination	To verify is the signs of written forms and manuals of each one of the sheets of the Q1 document, expose variations in its overall structure and possible alterations by subtraction or addition
	Ultraviolet Light	To check reactions of tonality on the surface of the paper and potential stains caused by abrasives.
	Video Spectral Comparator (VSC)	To verify the possible differences in the intensities of ink presenting the written forms and manuals in each one of the sheets that make up the document Q1.
	Infrared Light	For comparison a after the light of the content of scriptural, setting up matches with respect to margins and spacing of letters, words and topographic distribution of logos printed on each of the sheets of the document Q1.
6EV46T	Video Spectral Comparator (VSC)	Scientific Method, applying the phases of: observation, signaling of the characteristics distinctives, comparison and identity judgments.
	Infrared Light	The questioned document was subjected to analysis by laboratory equipments, using different light sources of the spectrum, and making a visual comparison with the other pages of the lease agreement.
72J7MA	Visual Examination	Impression of paperclip in top left corner of pages 1 and 3, but not present on page 2.

TABLE 2

WebCode	Methods/Techniques	Observations
	ESDA	Entries from page 1 were detected on page 3, but not on page 2. Additional entries from an unknown source were also detected on page 3. These are in similar positions as the entries on page 2, but with different values for dollar amounts. Assuming the same printed content on the original page written on while on top of page 3, in paragraph 7 the additional deposit was "100" and additional monthly rent was "25", and in paragraph 8 the parking fee was "20".
	Ultraviolet Light	Page 2 is brighter under UV-C than pages 1 and 3. Pages 1 and 3 show similar brightness under UV light.
	Macroscopic/Microscopic Examination	All handwritten entries on pages 1 - 3 are in black ballpoint pen ink. Occupant entries ('JD' initials, signature and associated date) on pages 1 and 3 darker than agent entries on these pages. All entries on page 2 appear to be the same colour. Agent entries on pages 1 and 3 have striations in the ink line. Striations are not evidence in occupant entries on these pages, nor any entries on page 2.
	Spectral Examination of Ink	The agent entries on pages 1 and 3 have similar spectral properties, as do the occupant entries on these two pages. All handwritten entries on pages 1 and 3 drop out at around 700nm. All of the handwritten entries on page 2 have different spectral properties to the entries on pages 1 and 3; specifically, the entries on page 2 do not drop out up to 1100nm.
	Handwriting Examination	Although the initials 'JD' on the three pages are limited in amount and complexity, and not suitable for a full and detailed examination, some details of construction of these differed between pages 1 and 3, and page 2. The features include 1) tick to right at end of J-hook on p1/3 not p2, 2) evidence of pen direction of J-top left to right on p1/3 and right to left on p2, 3) backhand slope of D-stem common on p1/3 not p2, and 4) somewhat broad, flat top of D common on p1/3 not p2.
77EZLW	Ultraviolet Light	Video Spectral Comparator(UV and Visible Light fluorescence Condition)
7EQ7AM	VSC 8000	The handwriting of the two letters (JD) in the second page of the questioned " Rental agreement" found in the clues 7 to 14 referred to Mr. James Dunn, differs from the handwriting of the two letters (JD) found in the pages 1 and 3 of the questioned document. it has been included that the questioned handwriting is from two different people. The ink used in the writing of the two letters (JD) in the second page of the questioned " Rental agreement" found in clues 7 to 14 , differs from the ink used to write the two letters (JD) found in pages 1 and 3 of the questioned agreement. it has been concluded that there are two different inks used in the writing of two letters (JD).
7HMR2Q	Visual Examination	staple holes in the three sheets, doubles marks on the three leaves in the upper left corner, mark of clip in the upper left corner of sheets 1 and 3
	Video Spectral Comparator (VSC)	The pen ink of the sheets 1 and 3 behaves in the same way with the same range of lights and filters and the ink of the ballpoint pen of the sheet 2 behaves in a different way using the same range of lights and filters. On sheet 1 and on sheet 3 on the upper left side of the obverse the mark of a paper clip was observed, and on sheet 2 it does not show this mark.

TABLE 2

WebCode	Methods/Techniques	Observations
	ESDA	When submitting the contract sheets to the ESDA team, it is observed that sheet 2 does not present indented writing from sheet 1. Sheet 3 presents only indented writing from sheet 1 and original sheet 2. Example: Sheet 3 shows the numbers "25" and "100", which are not found in any of the sheets. The mark of a clip was observed on sheet 1 and on sheet 3 on the upper left side of the obverse, and sheet 2 does not show the mark of the clip.
	METHOD OF ANALYSIS OF ALTERATION OF DOCUMENTS	staple holes in the three sheets, doubles marks on the three leaves in the upper left corner, mark of clip in the upper left corner of sheets 1 and 3. The pen ink of the sheets 1 and 3 behaves in the same way with the same range of lights and filters and the ink of the ballpoint pen of the sheet 2 behaves in a different way using the same range of lights and filters. On sheet 1 and on sheet 3 on the upper left side of the obverse the mark of a paper clip was observed, and on sheet 2 it does not show this mark.
	Macroscopic/Microscopic Examination	the same printing system was detected in the three sheets of the document
	Infrared Light	difference of pen ink of sheet 1 and 3 was observed with respect to sheet 2
	Oblique Light	the clip mark was observed on sheets 1 and 3
7KMICY	Ultraviolet Light	Used to determine page insertion as page 2 was a different color of purple than page 1 and 3.
	Video Spectral Comparator (VSC)	Compared inks on all 3 pages, 1 and 3 were consistent and absorbed, page 2 contained luminescence. Page 2 was written with a different ball point pen ink.
	Visual Examination	Compared fonts on all 3 pages, appeared to be the same font.
	Magnification	Examined font and handwriting.
	Oblique Light	Used side light and all 3 pages were negative of indentations.
	Handwriting Examination	Initials on page 1 and 3 were consistent, however, they were inconsistent on page 2.
7UG738	Visual Examination	The analysis is carried out by means of optical inspection from left to right, from top to bottom, on both sides, not identifying possible alterations such as deletions or amendments, only in the upper left part of sheets 1 and 3 there are marks of a clip.
	Ultraviolet Light	With ultraviolet light in the contract, no possible alterations are identified.
	Oblique Light	It is analyzed with oblique light from left to right and from top to bottom, where the marks of a clip can be seen in the upper left, on one side of the staple only on sheets 1 and 3.
	Transmitted Light	Analyzing with transmitted light, it is only confirmed that the watermark if corresponds in relation to the three leaves.
	Infrared Light	With infrared light nothing is detected.
	LUMINESCENCE	The contract to treves of the luminescence is analyzed with a band of 590 manual 680 and an emission of 830 in the video comparator equipment Docucenter Projectina, in which in sheets No. 1 and 3 the ink corresponding to the handwritten letter shines, while that with the same filters in sheet No. 2 the ink disappears. Likewise, an analysis is made with the three sheets of the contract simultaneously.

TABLE 2

WebCode	Methods/Techniques	Observations
	ESDA	The contract is analyzed through the ESDA team, in sheets No. 1 and 2, no furrows are revealed; likewise in sheet No. 3, grooves are revealed that do not correspond to the writing of sheet No. 2. In the second sheet of current contract, in point 7 you are charging Mr. Jamees Dunn \$ 200 for additional deposit, while in the development you can see the amount of 100. In the additional amount \$ 50 and in the revealed \$ 25. At point # 8. Parking is currently charged 30, and in the development is \$ 20. Likewise you can see quantities of the first sheet in the third, which if they match each other.
7XFKNC	ESDA	Indentations observed
	Video Spectral Comparator (VSC)	Optical Differences
83QW4P	[No Methods Reported.]	
8Q3L3D	Microscopic Examination	On pages 1 and 3, the majority of the writing has more striations apparent under magnification than the "JD" initials or Resident's Signature and date. On page 2, there is no apparent difference in the amount of striations between any of the writing.
	Visual Examination	On pages 1 and 3, the majority of the writing has a slightly different color than the "JD" initials or Resident's Signature and date. On page 2, there is no apparent difference between the color on any of the writing. Impressions that may be attributable to a paper clip could be seen on pages 1 and 3 but not on page 2.
	ESDA	Writing impressions were developed on the third page, which appear to read "100," "25," "JD," "6854," "20," "JD," followed by six more "JD" initials. They originate from a document with the same format (as far as spacing for handwritten entries) as the submitted second page but that are not from that page. The impressions are what I would expect to find if a different second page had been completed while placed on top of page three. All of these impressions overlay where the handwriting would be filled out on page two if the machine-printing of the substituted document is the same as the one submitted. In that case, the pet deposit, additional monthly rent for the pet, and parking fee would all be different than what appears on the submitted second page.
	Oblique Light	Impressions that may be attributable to a paper clip can be seen on pages 1 and 3 but not on page 2.
	Video Spectral Comparator (VSC)	Under UV excitation at 312 and 254nm, pages 1 and 3 fluoresce similarly, while page 2 fluoresces differently than pages 1 and 3. When viewed under the IR portion of the spectrum, the ink on pages 1 and 3 transmits using a 695nm barrier filter, while the ink on page 2 continues to absorb at 1000nm.
	Handwriting Examination	When the initials "JD" on pages 1 and 3 were compared with the initials "JD" on page 2, dissimilarities were noted. The information contained in only two characters is limited however, and less information is present with which to conduct a meaningful handwriting comparison.
8QUHRH	Microscopic Examination	Initials appearing on page 1 appear darker in color than the rest of the entries on that page. Hand printed entries on all pages appear naturally prepared with no indication of simulation or tracing. One set of staple holes was evident on all three pages of the agreement.

TABLE 2

WebCode	Methods/Techniques	Observations
	Oblique Light	Pages 1 and 3 bear visible impressions from a paper clip (not submitted) in the top left corner of the paper.
	ESDA	Written numerals "6854" on page 2 are different in form from the corresponding indented form on page 3. Written initials on page 2 are different in size and form in indented form on page 3. Six initials on page 1 are the same size and form as that appearing in indented form on page 3. Other characters from page 1 are also visible in indented form on page 3, but the indented initials are more prominent. Initials and numerals on the submitted page 2 do not appear in indented form on page 3. Also, the numeral amounts are different (e.g. Pet deposit is 200 on page 2 and 100 in indented form on page 3). Details in report. [Attachment not provided by participant]
	Handwriting Examination	There are differences in the formations and, in some instances, size of the "J" and "D" initials appearing on page 2 compared to pages 1 and 3. The writer of the hand printed initials on page 1.2 probably did not prepare the hand printed initials on pages 1.1 and 1.3.
	Transmitted Light	Pages 1, 2, and 3 bear no apparent differences in paper fiber patterns and colors when viewed with transmitted light.
	Video Spectral Comparator (VSC)	Spectral differences (IR and IRL) were noted between entries on page 2 and pages 1 and 3. Spectral reactions between the entries on pages 1 and 3 did not appear to be different. A difference in UV fluorescence was noted between the paper of page 1.2 and pages 1.1 and 1.3.
	Micrometer	All pages are the same thickness.
	Overlays	Transparency overlays of page 2 with the ESDA lifts from page 3 confirmed the differences in indented initials on page 3 compared to the written initials on page 2.
8YE3AE	Macroscopic Examination	The questioned documents, Q1.1, Q1.2, and Q1.3, were viewed macroscopically with ambient lighting. They all appear to be a white sheet of copy paper that are the same in size. A staple was present in the top left corner of the lease agreement that held Q1.1-Q1.3 together. The back side of Q1.3 has several areas of what appears to be a black substance.
	Microscopic Examination	The questioned documents, Q1.1, Q1.2, and Q1.3, were examined microscopically using a stereo microscope Stemi 2000-C. The questioned documents appear to contain text that is toner printed. The handwritten portions appear to be written in black ball point ink on Q1.1 and Q1.3. Burr striations are heavily present in the ink used on Q1.1 and Q1.3. Q1.1 – Q1.3 appear to be produced using toner technology.
	Video Spectral Comparator (VSC)	The questioned documents Q1.1, Q1.2, and Q1.3 were examined using ultraviolet lighting. The ultraviolet responses of the paper appear to be the similar for Q1.1 and Q1.3. The questioned document, Q1.2, appears to not react similarly. Using spot fluorescence and infrared absorption, it appears that the ink on the questioned documents, Q1.1 and Q1.3, react similarly. The questioned document, Q1.2, contains ink that did not react similarly.
	Oblique Light	Fiber-optic oblique lighting was used to determine if apparent latent writing impressions were present on Q1.1, Q1.2, and Q1.3. Latent writing impressions appear to be present on Q1.1 – Q1.3.

TABLE 2

WebCode	Methods/Techniques	Observations
	ESDA	Latent writing impression restoration was performed using the ESDA on the front and back of the questioned documents, Q1.1, Q1.2, and Q1.3 at 0 minutes humidity. Latent writing impressions were developed on the front and back side of Q1.3. Latent writing impressions were developed only on the back side of Q1.1 and Q1.2. Latent writing impressions (LWI) developed on the front side of Q1.3 appear to be different from the handwritten portions on the front side of Q1.2. Specifically, under the section titled "PETS", LWI were developed that read "100" and "25" for the filled in portions instead of "200" and "50" that is written on Q1.2. Also, under the section titled "PARKING", LWI were developed that read "20" instead of "30" that is written on Q1.2. No LWI were developed on the front side of Q1.2.
92GZNU	Oblique Light	Latent writing is identified on sheet 3. The pressure exerted on the writing instrument used in sheets 1 and 3 is similar, but not in sheet 2. In sheets 1 and 3, they show in the upper left corner the mark of a sheet holder (clip), a mark that does not have sheet 2.
	Ultraviolet Light	Analysis of the behavior of the inks; presenting similar behavior between the filling ink of the sheets 1 and 3, however the ink filling of the sheet 2 presents a different behavior with the previous ones.
	Indented Writing	Analysis of the behavior of the inks; presenting similar behavior between the filling ink of the sheets 1 and 3, however the ink filling of the sheet 2 presents a different behavior with the previous ones.
	Video Spectral Comparator (VSC)	Using the Spectral Comparator Video, in the spectrometer toolbar; presenting similar behavior between the filling ink of the sheets 1 and 3, however, the filling ink of the sheet 2 presents a different behavior with the previous ones.
	method of analysis for documentary alterations and method of non-destructive analysis of inks	Through the techniques referred to in advance and the stages contemplated by each method developed; it was identified that document Q1 is altered.
94DJKU	ESDA	There are indentations showing lower amounts on page3, corresponding with the position of pet deposit and rent on page2. There are indentations of signatures on page3, but they do not match the signatures on page2. There are also some indentations of writings from page1 left on page3.
	Video Spectral Comparator (VSC)	The color and spectral characteristics of handwritings on page2 are different from that on page1 and page3 .
	Video Spectral Comparator (VSC)	There are indentations of paperclip on page1 and page3, but not on page2.
	Microscopic Examination	Micro ink characteristics of handwritten contents on page1 match with the ones on page3, but are different from that on page2.
	Handwriting Examination	The handwriting characteristics of "JD" on page2 are different from that on page1 and page2.
97BUH8	Oblique Light	Indented writing (numerals and signatures "JD") were observed on page 3 but not on pages 1 and 2.
	Video Spectral Comparator (VSC)	Examination under spot light revealed that the optical properties of the writing ink of the handwritten entries on page 1 was consistent with that on page 3, but was different from that on page 2. This indicated that the handwritten entries on page 2 and those on pages 1 and 3 were written with different pens.

TABLE 2

WebCode	Methods/Techniques	Observations
	ESDA	(a) Indented writing corresponding to the handwriting on page 1 was found on page 3. (b) However, indented writing corresponding to the handwriting on page 2 was not found on page 3. (c) In addition, extra indented writing "100", "25", "#6854", "20" and signature initials "JD" was found on page 3. The relative positions of the indented writing were consistent with the positions of the handwritten entries on page 2. However, none of them corresponded to the handwriting on page 1 nor page 2. The findings indicate that the original page 2, which was written while the existing page 3 was placed under it, had been substituted with the existing page 2.
	Ultraviolet Light	Pages 1-3 reacted with ultra-violet lighting to give bright blue color. However, the optical appearance of pages 1 and 3 under UV was slightly different from that of page 2.
	Microscopic Examination	Visual examination revealed no sign of alteration by means of overwriting/erasure on the handwriting "40" for "Utilities" on page 1. The writing movement and relative proportion of the signature initials "JD" on pages 1 and 3 were agreed with each other, but were different from those on page 2.
9A7VBA	ESDA	Indentations on page three of Item 1 (Item Q1) observed which did not correspond with handwritten entries on page two of Item 1 (Item Q1).
	Visual Examination	Striation differences noted in handwriting ink on page two of Item 1 (Item Q1) when compared to the handwriting ink on pages one and three of Item 1 (Item Q1).
	Video Spectral Comparator (VSC)	The handwriting ink on page two of Item 1 (Item Q1) reacted differently using the VSC as opposed to the reaction of the handwriting ink on pages one and three of Item 1 (Item Q1).
	Oblique Light	Binding marks from a paper clip were observed on pages one and three of Item 1 (Item Q1). These binding marks were not observed on page two of Item 1 (Item Q1).
9AC6HV	Indented Writing	Analysis conducted using oblique lighting and Electrostatic Vacuum Box. No indented writing was found in pages 1 and 2. In page 3, the following indented writing was found: "100", located in a similar position as the visible writing of "200" in page 2; "#6854", which does not match the same writing on page 2; "20", located in a similar position as the visible writing of "30" in page 2; "JD", with a similar location as the writing of "JD" in points 7 to 14 of page 2. However, the indented writing does not match the visible writing on page 2; "685", which matches the corresponding writing in page 1. No indented writing was found in page 3 that matches the actual writing in page 2.
	Video Spectral Comparator (VSC)	Ink in page 2 exhibits a different behavior from the inks in pages 1 and 3. No differences were found between the inks in pages 1 and 3.
	Macroscopic/Microscopic Examination	Confirmation of the observations made with the VSC. No differences were found in the printing system or in the paper. The tone of the background image in page 2 is lighter than in the other pages of Q1.
	Grid	The three pages of Q1 were also analyzed with a grid. No misalignments were detected.
9BT8DB	Visual Examination	Paper clip marks were found on the left top of item Q1 (only page 1 and page 3), but not found on page 2.

TABLE 2

WebCode	Methods/Techniques	Observations
	Video Spectral Comparator (VSC)	IR Fluorescence: The writing ink on item Q1, only page 1 and page 3, have fluorescence, while page 2 has no fluorescence at all. Oblique Light: The paper clip marks on the left top of item Q1, have the same position between page 1 and page 3, while page 2 has no mark.
	Magnification	Handwriting alteration: No handwriting alteration was found.
9MG9QP	Visual Examination	Inconsistencies were observed in paper clip impressions across pages. Paper clip impressions are on Q pages 1 & 3; no impression on page 2. Examination of the document's back revealed heavier pen pressure impressions of "JD" initials on Q page 1 & 3, but Q page 2 initials contain lighter pressure impressions. Calipers used to measure paper thickness across Q pages.
	Microscope, UV and IR light testing	UV testing for paper property brightness revealed Q page 2 differs in brightness compared to Q page 1 & 3. MiScope IR testing for signs of ink differentiation within relevant fee entries. Stereoscopic microscope 7-35x examination with oblique light for evidence of disturbed paper fibers from erasure or alteration.
	Handwriting Examination	Scanned Q document in color at 600dpi to utilize computer for enlargements and create illustrative comparative chart of "JD" initial handwritten features. Pg. 2 "JD" initials contain significant differences by smoother line quality, lighter pressure patterns, higher skill ability and certain letter constructions from that of "JD" initials found on pg. 1 & 3.
AA6B88	ESDA	Pages 1 and 2- no latent handwriting impressions observed. Page 3- latent handwriting impressions observed. Faint impressions of handwriting from page 1 observed including utilities entry of 'electric & water', '\$40' and initials 'JD', these impressions overlay with the entries on page 1. Other impressions observed align with areas of text on page 2 but the impressions are different to the page 2 text. Impressions corresponding with pet entries (same relative position) are '100' and '25' not '200' and '50', parking fee impression '20' not '30'. Impressions of parking space number and initials do not overlay with entries on page 2.
	Visual Examination	One staple holding all 3 pages together, no evidence of tampering with staple (no additional holes). Pages 1 and 3 have impression of paper clip in top left corner, no apparent impression observed on page 2.
	Macroscopic/Microscopic Examination	Black laser print/copy process used to produce all 3 pages, black toner observed. (no colour toner observed). No trashmarks observed. One dark paper fiber observed on page 1 in right side border. Writing inks of all 3 pages appears to be black paste ink. Pages 1 and 3- Writing inks different in thickness and colour between 'JD' initials, resident signature and date, and all other entries. Page 2 entries all appear to be similar ink (thickness and colour) however, page 2 ink appears different (thickness and colour) to both inks on pages 1 and 3.
	Transmitted Light	Examined paper of pages 1 to 3, no watermarks observed, pages appear similar opacity and colour.

TABLE 2

WebCode	Methods/Techniques	Observations
	Video Spectral Comparator (VSC)	Results of spectral exam using VSC8000 for IR absorption/reflectance and luminescence - Handwritten entries on page 1 and 3 display similarities in spectral properties when compared with each other. Handwritten entries on page 2 display similarities in spectral properties when compared with each other. Handwritten entries on page 1 and 3 display differences in spectral properties when compared with the handwritten entries on page 2. Therefore, the ink used for the entries on page 2 is different to the ink used for the entries on pages 1 and 3. Result of UV examination of paper - A similar UV spectral reaction was seen in the 3 pages (all paper UV reactive).
AAFTRM	Oblique Light	Impressions appear on Pages 1,3 that do not appear on page 2.
	ESDA	Numerical impressions appear on page 3 that do not correspond with the numerals on the submitted original page 2.
	Ultraviolet Light	Page 2 exhibits a different color than pages 1,3.
	Transmitted Light	No manufacturer's watermark observed on pages 1,2,3.
	Video Spectral Comparator (VSC)	Various wavelengths exhibit different chemical makeup of the ink on page 2 versus the ink on pages 1,3.
AWWRAC	Macroscopic Examination	On pages Q-1 1 and Q-1 3, on the upper left corner of each page, there is an outline/indentation of a possible previous paper clip attachment. This is not seen on Q-1 2.
	ESDA	On page Q-1 3, there are impressions found. Two "JD" impressions and one "#6854" impression were recovered and their alignment is in agreement with the same entries found in paragraphs #7 & #8 of Q-1 2. However, there are other impressions, "100", "25" and "20", that are not the same as the other entries in paragraphs #7 & #8 ("200" "50" "30"), but these impressions do align with those entries.
	Video Spectral Comparator (VSC)	The inks of pages Q-1 1 and Q-1 3 are spectrally similar. The ink on page Q-1 2 is spectrally different than the inks on pages Q-1 1 and Q-1 3.
B2AR74	Oblique Light	Various impressions/indentations/embossing were observed on Exhibits 1(pp1-3).
	ESDA	No indentations were developed or observed on Exhibits 1(p1) and 1(p2). Indentations originating from Exhibit 1(p1) and from an unknown source(s) were observed on the front of Exhibit 1(p3).
	Ultraviolet Light	No significant differences were observed between the light reactive properties of Exhibits 1(pp1-3).
	Dichroic filters	The ink(s) used to produce the handwritten entries on Exhibit 1(p2) display light reactive properties that differ from the ink(s) used to produce the handwritten entries on Exhibits 1(p1 and p3).
	Video Spectral Comparator (VSC)	No evidence was detected/observed to suggest that the handwritten monthly rate for utilities was altered.
B9Q4K6	Microscopic Examination	Began examination by conducting a microscopic exam of Exhibits 1(1-3) and noted that the documents contain toner (printed entries) and all handwritten entries were made with a ballpoint ink.
	Indented Writing	Conducted ESDA exam of Exh 1(1-3) and noted that indentations with similar characters "#6854" to the entries appearing on 1(2) appeared on Exh 1(3). Some indentations found were not the same in the areas pertaining to the pet deposit and parking fees. Numerous other indentations from Exh 1(1) appeared on Exh 1(3).

TABLE 2

WebCode	Methods/Techniques	Observations
	Oblique Light	Conducted a side lighting exam of Exh 1(1-3) and noted that a paper clip impression was noted on Exh 1(1 and 3) on the top left side of the documents, but there was no such impression on Exh 1(2).
	Video Spectral Comparator (VSC)	Utilized the VSC 6000 to examine the inks on Exh 1(1-3). Noted that there were Optical differences in the ink on Exh 1(2) from the inks on Exh 1(1 and 3).
BAYJQB	Indented Writing	The documents were examined with oblique light and the ESDA. Indentations were developed on the documents. The indentations developed on page 3 have differing amounts for Items 7 and 8 than the submitted page 2. A different page 2 existed. There are indentations from a paper clip on pages 1 and 3. The indentations are not present on page 2.
	Infrared Light	The inks were examined for similarities and differences with the video spectral comparator. The inks on pages 1 and 3 were similar, but different than page 2 during the reflected infrared and infrared luminescence examinations.
	Handwriting Examination	There are subtle differences in the writing of the "JD" initials. Pages 1 and 3 were similar, but there are some differences with page 2. A comparison to known writing samples may provide more definitive conclusions regarding authorship.
BGJNF6	Visual Examination	The staple holes did match on all 3 pages, but they could have been stapled at a later date. The paper ckip impression was only visible on page 1 and page 3, not page 2, leading to further examination re: possible page substitution.
	Infrared Light	The black ink on pages 1 & 3 is a gray/black and consis tent under IR examination (760 nm and 850 nm). The ink on pg.2 is a darker black and appears visually dissimilar under IR luminescence than the ink on pages1 & 3.
	ESDA	Indentations from the writing on page 2 do not appear on page 3.
	Oblique Light	Indentations from the writing on page 2 do not appear on page 3.
	Handwriting Examination	The initials are simple in form, and might not be difficult to emulate, depending on the skill of the writer doing the simulation. The initials "JD" on pages 1 and 3 rest on the baseline. The initials JD on page 2 float above the baseline in 7 out of 8 examples.
	Microscopic Examination	When focusing on the initials "JD", it was observed that the cross bar on the capital "J" often has a hook at the terminus ending on the right (east) side of the crossbar. This is only found on the "JD"initialson pages 1 and 3. The cross bar on the capital "J" in the "JB" initials on page two contains no such hook. In addition, on page 2, the downward stroke of the "J" sometimes extends above the cross bar on the "J". This formation is not seen on the capital J initials on page 1 and 3.
BJNDHD	Visual Examination	Visual Exam - extra staple holes on Page 3 upper left corner. Chance impression of paper clip observed on Page 1 and 3 but not on Page 2. Watermarks identical on all three pages. Comparable size of paper matches for all three pages. Print-process and fonts match for all three pages.
	Ultraviolet Light	Ultralight exam shows different paper brightness on Page 2
	Indented Writing	Original ink entries indent the paper.

TABLE 2

WebCode	Methods/Techniques	Observations
	Microscopic Examination	Digital microscope exam didn't yield differentiation.
BVR7WE	Visual Examination	Visible indentation on pages 1 and 3 caused by a paper clip. No evidence of indentations from a paper clip on page 2.
	Macroscopic/Microscopic Examination	The "JD" initials appearing on page 2 appear to have been executed by a different person than the same initials appearing on pages 1 and 3.
	ESDA	Negative results on pages 1 and 2. Page 3 contains information indented from page one and indented information that is the same in content and location but different in monetary amounts with what is currently on page 2. There are "JD" initials that appear to be consistent with the author of the initials on pages 1 and 3 and the information for the "Pets" entry reads "100" for the deposit and "25" for the monthly rent for pets. There is also an entry in the area of the monthly parking fee that reads "20."
	Infrared Light	Inks on page 2 absorb differently than inks on pages 1 and 3. Inks on page 2 fluoresce differently than inks on pages 1 and 3.
	Ultraviolet Light	Pg. 2 fluoresces slightly brighter than pages 1 & 3.
	Thickness	The thickness for the paper for each page is .0004"
	Ruler	ERuler - The bulk of the type font used to prepare the Exhibit Q1 item is consistent with a 12-point Times New Roman style.
	Microscopic Examination	The printed material appearing on the Exhibit Q1 item was prepared with the aid of an office machine system that utilizes dry black toner.
C3BVWF	Visual Examination	Possibly different writer of Page 2 "JD" initials in comparison with Pages 1 and 3; possibly different ink in comparison of Page 2 with Pages 1 and 3; as well as possible paper clip marks on Pages 1 and 3 and possibly no paper clip mark on Page 2. Possible Page 2 substitution.
	Handwriting Examination	Significantly dissimilar combination of handwriting characteristics of Page 2 "JD" initials in comparison with handwriting of Page 1 and Page 3 "JD" initials, which have significantly similar handwriting characteristics. Due to limited quantity of handwritten number 4 and no discernible indented handwriting developed during ESDA processing to indicate alteration of "Utilities" portion of Lease Agreement, no conclusive determination regarding the handwritten number 4 could be made. Comparison of handwritten entries of Page 1 and Page 2 with indented handwriting developed through ESDA processing (see below) provided evidence that Page 2 of the submitted lease Agreement was probably a substitution. Evidence includes variations of the non-disputed handwritten entries (similar handwriting features, yet, indented writing does not overlay in comparison with corresponding handwritten entries of submitted Page 2); dissimilarities of handwriting features of Page 2-aligned "JD" initials; different amounts that align with Page 2 "Pets" and "Parking" portions of Lease Agreement; and alignment and similarities of handwriting features observed for Page 1 handwriting entries in comparison with features of indented handwriting developed through ESDA processing of Page 3.

TABLE 2

WebCode	Methods/Techniques	Observations
	Video Spectral Comparator (VSC)	Optical ink characteristics of Page 2 handwritten entries are different in comparison with optical ink characteristics of Page 1 and Page 3 handwritten entries. Optical ink characteristics of Page 1 handwritten entries are similar in comparison with optical ink characteristics of Page 3 handwritten entries. Handwritten ink entries of Page 2 did not luminesce when examined using the same settings of Spot Illumination in comparison with handwritten ink entries of Page 1 and Page 3. Page 1 and Page 3 handwritten ink entries did luminesce, with the same settings used during VSC examination of Page 2.
	Oblique Light	Upper left corner of Pages 1 and 3 have a paper clip-shaped indentation mark. Upper left corner of Page 2 has no visible paper clip-shaped mark nor indentations.
	ESDA	No discernible indented writing was developed through ESDA processing of Pages 1-2 of the submitted Lease Agreement. Some indented writing was developed through ESDA processing of Page 3 of the submitted Lease Agreement. Indented writing included variations of the non-disputed handwritten entries (significantly similar handwriting features, yet, indented writing does not overlay in comparison with corresponding handwritten entries); significantly dissimilar handwriting features of Page 2-aligned "JD" initials (handwritten "JD" entries of submitted Page 2 in comparison with indented writing developed of Page 3); different dollar amounts (possible "100" "25" and "20" indented writing developed of Page 3) that align with Page 2 "Pets" and "Parking" dollar amount portions of Lease Agreement; and significant similarities of handwriting features observed for Page 1 handwriting entries in comparison with features of developed indented handwriting of Page 3 that align with Page 1 handwritten entries.
	Decipherment	Possible decipherment of indented handwriting developed during ESDA processing, that align with "Pets" and "Parking" portions of Lease Agreement, differ in comparison with the handwritten entries of the submitted Lease Agreement Page 2. The submitted Page 2 "Pets" portion entries of "200" and "50" were not developed during ESDA processing. Entries that are possibly "100" and "25" were developed as indented writing during ESDA processing of submitted Page 3. The submitted Page 2 "Parking" portion entry of "30" was not developed during ESDA processing. Entry that is possibly "20" was developed as indented writing during ESDA processing of Page 3.
CN2A99	Oblique Light	Paper clip impression on pages 1 and 3; no paper clip impression on page 2.
	Video Spectral Comparator (VSC)	UV: paper; page 2 optically dissimilar to pages 1 and 3. IR: ink; handwritten entries on page 2 are optically different to handwritten entries on pages 1 and 3.
	ESDA	No indented impressions observed on pages 1 and 2. Some indented impressions observed on page 3 were sourced to page 1. Some indented impressions observed on page 3 were unsourced. No indented impressions observed on page 3 were sourced to page 2.
	Macroscopic/Microscopic Examination	Machine printing and writing instrument identification.
	Ruler	Measurement of margins
CREA6Z	Visual Examination	Visually examination determined that there was an impression on page 1 and 3 on the top left corner. This impression was missing on page 2.

TABLE 2

WebCode	Methods/Techniques	Observations
	Thickness	Using electronic calipers, the thickness of the paper was measured. Page 1 and Page 3 measured .08mm and page 2 measured .06mm. A slight difference in thickness.
	Video Spectral Comparator (VSC)	Using the VSC light sources UV, spot, IR all three pages were examined. Page 1 and page 3 are darker than page 2 under UV. Also, page 1 and page 3 ink reacts differently than ink on page 2.
CRUFH6	Video Spectral Comparator (VSC)	Utilizing the VSC different optical properties of the inks located on page 2 compared to pages 1 and 3 were observed.
	ESDA	The ESDA aided in visualizing indented writing on page 3 which contained different dollar amounts than the dollar amounts visible on the submitted page 2.
	Oblique Light	Utilizing the oblique lighting, impressions of a paper clip were observed on page 1 and page 3; however were absent on page 2.
CV72U8	Microscopic Examination	The handwriting and signatures of the questioned documents, were done with ink of rolling point and non-rolling.
	Transmitted Light	The handwriting and signatures of the questioned documents, were done with ink of rolling point and non-rolling.
	Video Spectral Comparator (VSC)	With the use VSC (Video Spectro Comparador) did the analysis with oblique light, ultraviolet light, Infrared light:
	Oblique Light	The third page of the Lease Contract presents indented marks.
	Ultraviolet Light	When the sheets of paper are exposed to UV (ultraviolet light), they react in a similar way.
	Infrared Light	The ink of the handwriting corresponds to the second page, it reacts differently to the ink of the handwriting of pages 1 and 2, when exposed to the IR filters (Infrared).
	ESDA	With the use ESDA did the analysis:
	Indented Writing	The third page of the Lease Contract has information in indented marks highlighted from handwriting, which come both from page 1 and page 2, of which we highlight fourteen (14) initials (JD) and numbers (#6854; 100; 250 and 30).
D2T2TK	Visual Examination	Paper clip mark on page 1 and 3. but no mark on page 2. Paper on page 2 appear a little less white and opaque then page 1 and 3. Staple through all pages. Consistent with replacement of page 2.
	Macroscopic/Microscopic Examination	Paper clip mark on page 1 and 3. but no mark on page 2. Paper on page 2 appear a little whiter and less opaque then page 1 and 3. Staple through all pages. Consistent with replacement of page 2.
	Video Spectral Comparator (VSC)	Difference in reactivity of the ink on page 2 vs ink on page 1 and 3 under spot illumination. Paper on page 2 Reacts more on UV 365 nm then page 1 and 3. Uses of different instrument on page 2 then page 1 and 3.
	Overlays	same alignment throughout the document, no misalignment or differences in margins or police used. Impression coherent in all pages.
	ESDA	no indented writing on page 1 or 2. Indented writing appears on page 3 but is not the writing visible on page 2 (different ammounts and different initials but consistant with the places it should appear if another page 2 was there. (100\$ deposit and 25\$ monthly instead of visual 200 deposit and 100\$ monthly and parking fee of 30 instead of 20\$).Coherent with replacement of page 2. Some original writing of page 1 also visible on page 3.

TABLE 2

WebCode	Methods/Techniques	Observations
	Handwriting Examination	Initials on page 2 inconsistent with initials on page 1 and 3, highly probably another writer. Consistent with replacement of page 2.
	Oblique Light	See ESDA comment
	Transmitted Light	Paper on page 2 a little more opaque than page 1 and 3 but otherwise no differences
DA8JFF	Method to Determine Alterations in Documents.	In the spectral analysis of the handwriting inks, from pages 1 and 3, there is no agreement with page 2 of the contract.
	Electrostatic Detection Method	On page three of the agreement, revealed furrows and indentations, do not belong to the writing on page two
	Visual Examination	The tonality of the handwriting inks on pages 1 and 3, is different with the tonality of page 2 of the Contract.
	Indented Writing	On page 3 revealed indentations, do not belong to the handwriting on page two.
	Oblique Light	On pages one and three were observed indentations, on page two they were not visually.
	Infrared Light	The reaction of the handwriting inks on pages one and three is different from the reaction of the handwriting inks on page two.
	ESDA	On page three of the agreement, revealed furrows and indentations, do not belong to the handwriting on page two.
DGHEY	Visual Examination	Greater inking is seen in the letters "JD" shown on p. 1 and 3 what is not observed on p. two.
	Magnification	The strokes of the letters "JD" made on p. 1 and 3 are seen with greater pressure unlike the strokes of the same letters on p. 2 where the pressure is slight.
	Video Spectral Comparator (VSC)	By taking it to the VSC and subjecting it to infrared light at a wavelength of 695Nm, you can see the different behavior of the inks on p. 1 and 3 versus p. 2 where you can establish that it was done with a different writer element.
DXR2TM	Microscopic Examination	Visual and microscopic examination of paper surface. Showed no evidence of abrasions and therefore no evidence that any entries had been rubbed out or removed.
	ESDA	ESDA examination showed faint indentations on page 3 from the entries on page 1. There were also entries similar in layout to those on page 2, but did not originate from page 2. In addition, some of the values were different.
	Ultraviolet Light	Page 2 is different to pages 1 and 3 when viewed using an ultra-violet light source.
	Video Spectral Comparator (VSC)	The handwritten entries on page 2 have been completed using a different ink to pages 1 and 3.
DZJMEF	Ultraviolet Light	PAPER ON PAGE TWO FLUORESES DIFFERENTLY THAN PAGES ONE AND THREE
	Visual Examination	PAGES ONE AND THREE HAVE AN INDENTATION FROM PAPER CLIP AND PAGE TWO DOES NOT.
	Microscopic Examination	APPEARS THAT THE INITIALS ON PAGE TWO ARE NOT CONSISTENT WITH THOSE ON ONE AND THREE

TABLE 2

WebCode	Methods/Techniques	Observations
EEM3K4	Visual Examination	(1) Three page Lease Agreement Document. Impressions from a paper clip were observed on page 1 and page 3 respectfully. There was no impressions of a paper clip found on page 2.
	Visual Examination	Pen Pressure: (1) Three page Lease Agreement Document. Page 1 and Page 3 have impressions of the initial "JD" on the back of the documents. Page 2 does not show those impressions.
	ESDA	(1) Three page Lease Agreement Document. Impressions were observed on Page 3, that supports signs of alterations.
EKQ7DN	[No Methods Reported.]	
EMCYYQ	ESDA	The 1st page - no significant marks. The 2nd page – there are no intended writings corresponded to the 1st page. The 3rd page – there are no intended writings corresponded to the 2st page. There are indented writings from the 1st page
	Magnification	The 2nd page - different ink's IR luminescence and absorption. The 1st and 3rd – same ink's IR luminescence and absorption. Different inks were used to fill out 2nd page of the agreement.
	Oblique Light	There are traces of a paperclip on the 1st and the 3rd page.
	Raman spectroscopy	Different inks were used to fill out the 2nd page of the agreement.
	Visualizer of magnetic properties Regula 4197	The same toners' magnetism.
	Microscopic Examination	Different pens were used to fill out the 2nd page of the agreement - there is a difference in micro traces.
EZKTGV	Visual Examination	The initials "JD" on Page Two have more widely curved bottoms on the "J"s and less triangle shaped "D"s and are larger overall than the initials on Pages One and Three. Other features, such as font, margin, spacing, arrangement are observed to be the congruent on all three pages.
	ESDA	There are indentations of the writing on Page One found on Page Three, but not on Page Two. Also, Page Three bears indentations of additional writing that would have the same positions as writings on Page Two, but do not match the Page Two handwriting features (although the content - "JD" - does match).
	Video Spectral Comparator (VSC)	The ink used on Page Two absorbs IR and does not luminesce, whereas the ink used on Pages One and Three reflects or transmits IR and does luminesce.
F3Y7JD	Visual Examination	Pages 1 and 3 of Q1 contain impressions on the top left corner (likely from a paper clip) that are not present on page 2.
	Video Spectral Comparator (VSC)	The handwritten entries on page 2 were created with a different ink than the handwritten entries on pages 1 and 3.
	ESDA	The handwritten entries on page 1 were developed as indented writing on page 3 along with several unsourced handwritten entries. The unsourced entries are similar in content and format of the existing page 2 of Q1. The handwritten entries on page 2 were NOT developed as indented writing on page 3. No indented writing was developed on page 1 or 2.
	Handwriting Examination	The handwritten "JD" initials on page 2 appear to be a different writer than the handwritten "JD" initials on pages 1 and 3.
F8KARZ	Visual Examination	All pages similar appearance

TABLE 2

WebCode	Methods/Techniques	Observations
	Microscopic Examination	Similar paper stock. Similar black laser printing incl watermark. Original pen entries.
	ESDA	Indentations from page 1 on page 3 but not page 2. Indentations from a previous version of page 2 on page 3 with smaller monetary amounts.
	Video Spectral Comparator (VSC)	Nil discrepancies with printing or paper. Nil evidence found of alterations.
FCQ9Z6	Visual Examination	No extra holes on pages. No significant differences in the general appearance or the positioning of the printing between pages.
	ESDA	Page 3: Indented impressions from the written entries on pages 1 and 2. Indented impressions of the disputed entries, that are located on page 2 (pet deposit, pet rent and parking fee), do not match the corresponding entries written on page 2. The indented impression of the disputed entry on page 1 (utilities) matches the written entry on page 1. The observed indented impressions: pet deposit 100, pet rent 25, parking fee 20
	Microscopic Examination	Monochrome toner, all three pages. No significant differences in the appearance, details or positioning of the printing. Written entries made with a pen on all three pages. No clear signs of tampering on staple.
	Oblique Light	On pages 1 and 3, a notable wrinkle in shape of a paper clip. The wrinkle is not observed on page 2.
	Video Spectral Comparator (VSC)	The entries made with pen on pages 1, 2 and 3 were compared. No significant differences in the optical properties between inks on pages 1 and 3 were observed. The optical properties of the written entries on page 2 differ significantly from the optical properties of the written entries on pages 1 and 3. The significance of this finding shall be assessed carefully since the entries lie on different pages (the paper may effect this finding).
	Ruler	No significant differences in the positioning of the printing between the pages.
	Transmitted Light	No signs of scraping or erasure of texts.
	FTIR	No significant differences between the toners on pages 1-3 in FTIR analysis.
FMJAV6	Visual Examination	Analyzed the document as a whole it is observed that the texts of "JD" filling and others of the second sheet of the contract present difference in the caliber in the caliber of their strokes, as well as the greater distance between these two characters with respect to the observed in sheets 1 and 3 of the contract.
	Infrared Light	Subsequently, by using the comparator video (8000), with infrared light in the range of 645 nm, the physical behavior of the inks used in filling out the fields on pages 1 and 3 begin to be absorbed (disappear) while in sheet 2 are maintained. Already in the range of 695 nm the completion texts in sheets 1 and 3 disappear completely and in sheet 2 they are maintained.
FXVLWX	Ultraviolet Light	Slight differences observed in the color of paper between documents under UV lighting.
	ESDA	Unsourced and sourced indentations revealed on 3rd page of rental agreement. No indentations found on first two pages.
	Video Spectral Comparator (VSC)	Optical differences observed.

TABLE 2

WebCode	Methods/Techniques	Observations
GBAFE2	Video Spectral Comparator (VSC)	Documents analysis without optic devices (hand, loupe, magnifying glass): it could be observed that the printed writing has be same design, margins, line-spacing, font and the text is not justified. Document analysis with optic devices (VSC 6000 AND VSC 8000 FOSTER AND FREEMAN) with this device, it was clearly seen that the printing method is laser. Document analysis with different light sources (VSC 6000 AND 8000 FOSTER AND FREEMAN): when it was subject to infrared liffth (RG695 nm) it showed transparency in the first and third page, and on the second page total absorption. Later was analyzed with Fluorescence light (RG725 nm) showing luminescence in the first and third page, and on the second page total absorption.
	ESDA	ESDA EQUIPMENT: the document was placed in the humidifier from 1 up to 2minutes, to reach appropriate humidity of 60% then it was placed on the platen, after the removing the plastic cover. The vacuum pump is turned on and placed in the control clart. The document is covered with a charging film (plastic film) and it is cut with the film knife, to separate it from the film roll. The high-tension corona bottom is lighted in blue. The document is waved with high-tension corona wire to charge it alectrostatically, until the light stops blinking. Then the electrostatic image is created and now the cascade method to develop identations can be carried out. Therefore the platen needs to be tilted in a position of approx 45° and the toner beads can be poured aver the surface, with the cascade method. Once it is developed a fixing film (adhesive lift) is carefully placed. Finally, the document is carefully separated from the chaiging film and fixing film as a results, several laten writings were developed in the third page. The page 3 showing the following legends: "25" and "100" which are digits different from those shows in page 2.
	Handwriting Examination	SIGNATURE ANALYSIS METHODOLOGY: Analysis of the collation signature: to observe their general characteristics and graphic gestures, which will be described and evaluated. Analysis of the dubited firms: to observe their general characteristics and graphic gestures, which will be described and evaluated. Comparison: consists of comparing the general characteristics and graphic gestures, obtained in the first two stages of analysis, in order to verify whether the characteristics obtained from the base comparison signature are reproduces or not in the firm. Throwing as a result: DIFFERENT GRAPHIC ORIGIN.
GGTA2A	Visual Examination	The missing paper-clip embossing on the face of page 2 was noted. It was present on pages 1 and 3.
	Oblique Light	Pages 1 and 3 show embossing from a paper clip; page 2 does not. Pages 1 and 3 show reverse side embossing of the visible writing on the faces of the documents; page 2 shows only slight embossing on its reverse in the area of line 8: "#6854".
	ESDA	The face of page 2 does not have indentations from the writing on the face of page 1. The face of page 3 does not have indentations from the writing on the face of page 2. The face of page 3 shows indentations from a missing page 2 and from page 1. Indentations on page 3 from a missing page 2 are placed in similar positions to the visible writing on page 2. They differ: indentations of the missing page show a pet deposit of \$100, additional monthly rent of \$25, and a monthly parking fee of \$20. All of the page 2 initials are different writings from the missing-page-2 initials indented on page 3. The indentations on the face of page 3 show all of the writing visible on the face of page 1.

TABLE 2

WebCode	Methods/Techniques	Observations
	Indented Writing	see ESDA above
	Video Spectral Comparator (VSC)	The ink on page 2 is different from the ink on pages 1 and 3.
	Handwriting Examination	Numerous differences were noted in the execution of the page 2 initials including: a drag from the centerline to the left to form the cap stroke of the J; the absence of a horizontal drag stroke from the left top of the bowl of the J; both initials off the baseline; and a loop at the top left of the D.
	Overlays	see ESDA. An overlay of page 1 on the page 3 ESDA lift showed the superimposition of the visible writing of page 1 on many of the indentations of page 3. The remaining indentations match the format of page 2. An overlay of page 2 on the page 3 ESDA lift showed no superimposing writing. It showed the similar placement of initials but the very different pet deposit, additional monthly rent, and monthly parking fee: \$200 v \$100, \$50 v \$25, and \$30 v \$20.
	Infrared Light	see VSC above
	Ultraviolet Light	see VSC above
GHW2VZ	Visual Examination	3 page document attached by one staple. No additional staple holes observed. US letter sized paper
	Ultraviolet Light	Page 2 displayed a different response to UV illumination (365nm) compared to pages 1 & 3
	ESDA	No indentation were detected on pages 1 and 2. Indentations of page 1 were detected on page 3. Indentations were also detected on page 3 in areas consistent with entries on page 2 however these indentations were caused by an unknown source document.
	Video Spectral Comparator (VSC)	Ink entries on page 2 displayed different Infra Red Luminescence and Infra red reflectance properties when compared with the ink entries on pages 1 & 3
GUR8NY	Microscopic Examination	Two different black inks were observed on pages 1 and 3. Differences were observed between both these inks and the ink on page 2. A single set of staple holes was observed on each page; however, an indentation from a paper clip was only observed on pages 1 and 3.
	ESDA	Indentations of the writing from page 1 were observed on the ESDA lift of page 3. Additional indentations of numbers and initials, not attributable to the writing on Q1, were also observed on the ESDA lift of page 3. The locations of these indentations coincided with the fillable portions of page 2. The indentations of initials and parking space number observed on the ESDA lift of page 3 do not superimpose the writing on page 2. The indentations of amounts in the area of the pet deposit and rent, and the parking fee are different from the writing on page 2. No indentations of the writing from the submitted page 2 was observed on page 3.
	Video Spectral Comparator (VSC)	A different optical reaction was observed between the ink used to write the fillable portions of page 2 and pages 1 and 3.
	Handwriting Examination	Differences in size and letterform were observed between the initials on pages 1 and 3 and the initials on page 2.
H7K88W	Visual Examination	There are variations in the traces of JD firms on page two with respect to pages one and three
	Magnification	The variations are observed within the strokes that form the letters of completion on page two with respect to pages one and three

TABLE 2

WebCode	Methods/Techniques	Observations
	Video Spectral Comparator (VSC)	You can see different behavior of the inks on page two with respect to the inks on pages one and three
H7ZBPM	Visual Examination	Examined visually the substrate (paper documents) to determine the paper size, color, did see a paper clip impression on Q1a and Q1c.
	Oblique Light	Examined visually using side lighting to check for indentations. Did see an impression of a paper clip on Q1a and Q1c.
	Microscopic Examination	Utilizing the microscope to determine the print process used in Q1a Q1b and Q1c. Determined that all documents were printed via a non-impact dry toner laser print process.
	Digital imaging	Scanned documents for future reference and to provide court charts if needed. Scanned in positive ESDA lift which will go onto the report.
	Indented Writing	Utilizing the Electrostatic Detection Apparatus (ESDA) to reveal indentations on the document. Did find indentations of value on Q1c front and back. A paper clip impression does appear on Q1a and Q1c.
	Video Spectral Comparator (VSC)	Utilizing the Video Spectral Comparator (VSC) to reveal dissimilar optical properties in the ink of Q1b as compared to Q1a, Q1c. Did reveal dissimilar optical properties of the paper Q1b as compared to Q1a, Q1c.
H8H9F9	ESDA	Indentations from an unknown source were also developed on the front side of Q1c. These indentations include seven repetitions of the initials "JD", and numerical values that read "25", "100", and "20". This is different from the amounts written on the front side of Q1b, which are "50", "200", and "30". The seven (7) repetitions of the initials "JD" on the front side of Q1b do not overlay onto the indented impressions of the initials that developed on the ESDA lift of the front side of Q1c.
	Video Spectral Comparator (VSC)	Q1 was examined using infrared (IR) light. The black ballpoint ink on pages Q1a and Q1c fluoresces when exposed to IR light. The black ballpoint ink on Q1b does not fluoresce when exposed to IR light. Therefore, the pen used to write the handprinting and numerals on Q1b is not the same pen as that used to write on Q1a and Q1c.
	Visual Examination	All of the handprinting, numerals, and signatures on Q1 were written with a black ballpoint pen. All of the machine generated text on Q1 was produced with an electrophotographic process, such as laser printer or photocopier. The font used to print the text on Q1 was determined by me to be Times New Roman (or similar).
HDGXBC	Visual Examination	The questioned document is analyzed, verifying in detail the general characteristics of the document, it does not present mutilations, scrapes, stains, to visual analysis. The perforations are detected in the upper left margin caused by staples
	Video Spectral Comparator (VSC)	The questioned lease agreement is analyzed by the spectral equipment, applying different types of light such as: white light, transmitted light, oblique, UV, IR
	ESDA	It is subjected to the electrostatic detection device (TONER WITH PEARLS)
HJ327L	Macroscopic Examination	Noted that there were no creases in the upper left hand corner of Q1 near the staple from the paper being folded- less chance for indented writing from page 3 on pages 1 or 2. Noted a single set of staple holes in the upper left hand corner of Q1- the holes on page 3 are slightly larger than on pages 1 and 2. Noted paper clip marks in the upper left hand corner of Q1 on pages 1 and 3 but not on page 2.

TABLE 2

WebCode	Methods/Techniques	Observations
	Indented Writing	Noted indented writing with oblique light on front of page 3 of Q1- initials "JD"
	ESDA	No indented writing developed on pages 1 or 2 of Q1. Indented writing developed on page 3 of Q1- consists of numbers, the initials "JD", and a partial address. Some of the indented writing is consistent with the writing on page 1 of Q1 the remainder of the indented writing is not consistent with page 2 of Q1- the amounts and initials are not consistent between pages 2 and 3
	Video Spectral Comparator (VSC)	UV and transmitted light used to examine paper in Q1- could not differentiate paper on pages 1 and 3, the paper on page 2 is different. Spot and bandpass filters used to examine ink on Q1- could not differentiate pen ink on pages 1 and 3, the pen ink on page 3 is different
HKWPMV	Microscopic Examination	It was requested to determine if the documents have been altered. Began examination by conducting a microscopic exam of Exhibits 1(1-3) and noted that the documents contain toner (printed entries) and all handwritten entries were original inked entries. It was also noted that a paper clip impression was observed the top left side of Ex 1(1 and 3). There was no paperclip impression observed on Ex 1(2).
	Video Spectral Comparator (VSC)	Examined Ex 1(1-3) utilizing the VSC 6000. It was determined that there were optical differences between the inked entries on Ex 1(2)and the inks on Ex 1(1 and 3).
	ESDA	Conducted ESDA exam of Ex 1(1-3) for the presence of indented writing images. Indented writing images were observed on Ex 1(3). Some indentations from Ex 1(1) appeared on Ex 1(3). Additional indentations found were not the same in the areas pertaining to the pet deposit and parking fees as they appear on Ex 1(2).
HNPELX	Visual Examination	Visual observations revealed that the documents were original with inked entries. Additional observations revealed that the "JD" initials on page 1 are darker in contrast than the remaining entries on page 1. The "JD" initials and other entries appear similar in color/contrast. The "JD" initials and "James Dunn" signature are darker in contrast than the remaining entries on the page.
	Microscopic Examination	Microscopic examinations revealed that the document was produced with an office machine system utilizing toner. The ink used to produce the handwriting entries on all 3 pages appears to be ballpoint pen ink.
	Ultraviolet Light	Q1.1 - Q1.3 were examined with transmitted light to determine if a watermark was present in any of the pages for association purposes. None of the pages examined contained a watermark. A subsequent examination was conducted utilizing ultraviolet excitation in order to determine if all the pages were consistent with each other. These examinations utilizing UV excitation revealed that the paper used to produce Q1.1 and Q1.3 reacted similarly to each other. However, the paper used to produce Q1.2 reacted differently than the other two pages, indicating that it be from a different source than Q1.1 and Q1.3.
	Video Spectral Comparator (VSC)	Various techniques were used to examine the written ink entries on Q1.1 through Q1.3. The ink formulation used to produce the "JD" initials on Q1.2 reacted differently than the ink used to produce the "JD" initials on Q1.1 and Q1.3 indicating that the ink used to produce the Q1.2 "JD" entries is a different ink formulation than the remaining entries and were written with a different writing instrument.

TABLE 2

WebCode	Methods/Techniques	Observations
	ESDA	The questioned documents were examined for the presence of any indented writing, typing or other identifying impressions. 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 indentation examinations revealed impressions indicating that the original amounts on page Q1.2 of the agreement were \$100 deposit, additional monthly rent \$25, and monthly parking fee \$20.
	Handwriting Examination	Comparative handwriting examinations between the "JD" initials on pages 1 - 3 revealed that the initials on pages 1 and 3 bear consistent repetitive handwriting habits with each other. However, the handwriting habits of the "JD" initials reveal some dissimilarities indicating that the "JD" initials on page 2 may have been written by a different writer than those on page 1 and 3 of the agreement.
	Ruler	Various measurements were taken from the left edge of the paper to the text. These measurements were consistent between Q1.1 - Q1.3.
J3U8CQ	Visual Examination	I see different writing characteristics.
	Microscopic Examination	The letters JD of the second page have different characteristics than the letters JD of the first and third page.
	Video Spectral Comparator (VSC)	Using the oblique light we can observe on identification product of a clip in the upper left part of the first and third pages, however we cannot observe it on the second page. We cannot see the indentations on the second page product of the writing on the first page. Using "Long Pass 780" the writing of the first and third page disappears this does not happen with the writing of the second page.
J8YN9G	ESDA	ESDA was used to visualize indentations of handwriting on the surface of three pages agreement. On the first and second pages were no any indentations. On the third page many indentations were found. Some of them were correspond with handwriting on the first page, some weren't. Any indentations weren't compatible to handwriting from the second page. However not matching indentations on the third page were located where indentations of handwriting from the second page of the agreement should be present. For example if on the second page is writing "200" then on the third page indentation of writing "100" is located.
	Video Spectral Comparator (VSC)	Optical properties (absorption and luminescence) of black ballpoint pen lines from first and third page were compatible and they were different than optical properties of black ballpoint pen lines from second page. There were no differences in optical properties of paper between all three pages of the agreement.
	Macroscopic/Microscopic Examination	On the first and third page of the agreement (on the upper edge) indentation of paper was found left by paper clip. The second page of questioned document is devoid this kind of deformation.

TABLE 2

WebCode	Methods/Techniques	Observations
JMGYCM	ESDA	A paper clip indentation and vertical machine-created indentations were observed on Exhibit Q1(1)a. No indented handwriting was observed. A paper clip indentation, handwriting and vertical machine-created indentations were observed on Exhibit Q1(1)b. Vertical and diagonal machine-created indentations were observed on Exhibit Q1(2)a. No indented handwriting or paper clip indentation was observed. Handwriting and vertical and diagonal machine-created indentations were observed on Exhibit Q1(2)b. No paper clip indentation was observed. A paper clip indentation, handwriting and vertical machine-created indentations were observed on Exhibit Q1(3)a. A paper clip indentation, handwriting and vertical machine-created indentations were observed on Exhibit Q1(3)b. The vertical machine-created indentations present on Exhibits Q1(1)a, Q1(1)b, Q1(2)a, Q1(2)b, Q1(3)a and Q1(3)b are of the same type and design; however, the diagonal machine-created indentations present on Exhibits Q1(2)a and Q1(2)b are of a different type and design and were not observed on Exhibits Q1(1)a, Q1(1)b, Q1(3)a, and Q1(3)b.
	Microscopic Examination	The questioned handwritten entries on Exhibits Q1(1)a, Q1(2)a and Q1(3)a were prepared by using black ballpoint ink. It was determined that the machine-generated entries on Exhibits Q1(1)a, Q1(2)a and Q1(3)a were prepared by using toner printing technology. The questioned handwritten entries on Exhibits Q1(1)a, Q1(2)a and Q1(3)a appear to be naturally written and contain a sufficient amount of characteristics to be compared with submitted known writing.
	Video Spectral Comparator (VSC)	The questioned handwritten entries on Exhibits Q1(1)a, Q1(2)a and Q1(3)a were prepared by using black ballpoint ink; however, ink differences were observed between Exhibits Q1(1)a and Q1(3)a when compared with Exhibit Q1(2)a. Due to only slight differences with the optical properties of the paper in Exhibits Q1(1)a and Q1(3)a when compared to Exhibit Q1(2)a, the exhibits could neither be identified, nor eliminated as having originated from a common source; however, the paper is of the same type and design.
	Scan	Exhibits Q1(1)a, Q1(1)b, Q1(2)a, Q1(2)b, Q1(3)a, Q1(3)b and ESDA indentation lifts were digitally scanned for documentation purposes and the digital images will be retained.
JQQ2ET	Visual Examination	Once evaluated the study material, can be seen which corresponds to three folios in which the processing manuscriptal appears (original) directly, in that the letters J D direct appreciation, observed on pages 1 and 3 present a different characteristics to those seen on page 2, especially in the shade of ink
	Video Spectral Comparator (VSC)	therefore was an observation with video comparator documents VSC 6000, and found that effectively under infrared radiation is evidenced clearly the differences. This allows to conclude that the page two of the contract, it features different from pages 1 and 3.
JVYAPN	Oblique Light	On the first and third page the same indented marks - typical for a paper clip - were found. There is no this kind of mark on the second page.
	Oblique Light	On all pages, characteristic indented vertical lines from the elements transporting paper in the printer are visible. On the second page they are definitely less visible.
	Oblique Light	On the third page, the indented marks from handwriting entries were found. They were not originating from the other pages of the questioned document.

TABLE 2

WebCode	Methods/Techniques	Observations
	ESDA	On the third page the indented marks of entries were found that indicate that the previous amounts in the contract items: pet deposit and rent, and parking fee, were as follows: "25", "100", "20". On questioned second pages these items are: "50", "200", "30".
	ESDA	On the third page there were found indented marks of entries from the first page. There were no the same marks on the second page.
	Video Spectral Comparator (VSC)	The handwriting entries (ballpoint inks) on the first and third page have the same optical properties, different then handwriting entries on the second page.
JXYF6U	Microscopic Examination	Black toner printing on all three pages, black ballpoint ink writing, one staple
	Indented Writing	Indentation of paperclip on page 1 and 3 with side lighting; six lifts created with the electrostatic detection device (EDD). No unsourced indented impressions developed on the lifts from page 1 and 2 in Q1 (uniquely identified as Q1A1 – Q1A4). The lifts from page 3 in Q1 (uniquely identified as Q1A5 and Q1A6) contains indented impressions from portions of the writing on page 1 and the following unsourced indented impressions: 25 100 JD #6854 20 JD JD JD JD JD JD J_ The following designations were used to identify the clarity of the decipherment of the indented impressions above: underscores ( _ ) represent a character/word that may be present but could not be deciphered. The placement of these indented impressions is similar in content and spacing to the writing on page 2, but the execution and some of the numbers at the top are different. [Participant submitted manually formatted data that was not transferrable into the final report, therefore, data is presented as is.]
	Handwriting Examination	The writing on Q1 was assessed and is suitable for comparison if known writing is submitted from subjects of interest.
	Ink Examination	Microscopically, the ink of the initials "JD" throughout page 1 and the "JD" initials, Resident's signature, and written date under Resident's signature on page 3 appears darker and with less striations than the other black ink on page 1 and 3. However using the non-destructive light examinations in the video spectral comparator (VSC) available, no differentiation or alterations of the ink on each page was observed. It should be noted that the ink on page 2 in Q1 stays visible throughout infrared on the VSC examination, where the ink on page 1 and 3 drops out in near infrared. Also, the paper of page 2 fluoresces slightly lighter than page 1 and 3.
JZ6ZRU	Visual Examination	Item Q1 was examined visually - looked at consistency for font style, writing instrument type and color consistency, areas of obvious indentations, area containing staple. Looked at margin consistency.
	Microscopic Examination	Examined print process - toner. Written entries - black ball point ink - initials on all pages appear darker than remaining written entries. Staple holes appear in line with each other and no extraneous holes present.
	ESDA	All 3 pages examined for indented writing with the ESDA. Test strip positive. Indentations on page 3 from the original writing of page 1 were observed. Other un-sourced indentations observed on page 3 and outlined in report.
	Indented Writing	Indentations observed of what appears to be from a paper clip in the upper left corner of pages 1 and 3 that do not appear on page 2.
	Video Spectral Comparator (VSC)	Infrared examination of pages 1-3 show ink appearing on page 2 is different than ink appearing on pages 1 and 3.
	Ultraviolet Light	Ultraviolet light examination of pages 1 - 3 show no differences in optical brightness of papers.

TABLE 2

WebCode	Methods/Techniques	Observations
	Transmitted Light	Checked for watermark - none.
	Handwriting Examination	The "D"s in the initials "JD" appearing on page 2 are a one stroke letter whereas the "D"s in the initials "JD" appearing on pages 1 and 3 are a 2 stroke letter.
K2778A	Macroscopic/Microscopic Examination Oblique Light Ultraviolet Light	Detailed microscopic observation of the particularities applying different magnifications and through the use of lighting.
K3JH4U	Microscopic Examination  Video Spectral Comparator (VSC)	The letter J of the JD text on pages 1 and 3 are graphically unipro- facts. The letter J of the JD text on page 2 is not uniproduct graphologically with the letter J of the JD text on pages 1 and 3. With the exception of the letters JD, the manuscript texts on pages 1 and 3 show striations on the strokes. All the manuscript texts on page 2 present a line without striations, it is homogeneous.  The ink in the handwritten texts on page 1 and page 3 presents the same infrared fluorescence reaction at a wavelength of 695 nanometers, while the ink in the graphics on page 2 shows no reaction in infrared fluorescence at any wavelength.
KBGYP9	Video Spectral Comparator (VSC) ESDA  ALTERATION ANALYSIS METHOD METHOD FOR FURROW DEVELOPMENT ANALYSIS	SHEET TWO WITH DIFFERENT INK REACTION TO SHEET ONE AND THREE  REVEAL OF FURROW IN SHEET THREE, WITH DATA DIFFERENT FROM SHEET TWO
KE7YFQ	Oblique Light  Video Spectral Comparator (VSC) ESDA	Paper clip marks visible on pages 1 and 3, but not on page 2.  The inks on page 2 are distinguishable from the inks on pages 1 and 3. Page 2 has brighter UV properties in comparison to pages 1 and 3.  The indented impressions of handwritten entries on page 3 are different to those entries now on page 2, specifically the amounts in 'Pets' (deposit & rent) and 'Parking'.
L6QWAF	Transmitted Light  Oblique Light  Video Spectral Comparator (VSC) ESDA  Visual Examination	Examined for evidence for the presence of watermarks in the paper - none were noted  Visualized paper clip indentations on Pages 1 and 3, initials on Page 3  Visualized difference in the reactions of the ink on Page 2 versus the ink on Pages 1 and 3  Visualized indentations on Page 3  Compared indentations on Page 3 to text on Pages 1 and 2. The 1200 and initials from Page 1 are indented on Page 3. The entries 100, 25, #6584, and 20 along with additional initials in locations consistent with the entries from Page 2; however, distinctly not the entries from Page 2, and indented on Page 3.

TABLE 2

WebCode	Methods/Techniques	Observations
LCMARE	Video Spectral Comparator (VSC)	a. The UV fluorescence reaction on the second page of the rental agreement show significantly different from both the first and third ones. b. The ink reaction of handwriting on the second page of the rental agreement is different from handwriting on both the first and third pages when held at to the infrared reflection and luminescence. c. The indented impressions of handwriting on the second page of the rental agreement are heavier than both the first and third ones while applying sidelight on the back of those pages.
	Microscopic Examination	Based on the observation of characteristics of writing instrument, the handwriting of second page and the first and third pages of the rental agreement is written by different pens.
LEFNUM	Visual Examination	The second page do not show the mark of the paper clip.
	Video Spectral Comparator (VSC)	The second page show diferent reaction in the "JD" ink
	ESDA	The third page have indented writing of the firts one. Is posible to recover the original hand writing: "100" instead "200" pet deposit, "25" instead "50" pet rent and "20" instead "30" parking fee.
	Ultraviolet Light	No observations
	Micrometer	No diferences
	Paper Whiteness and thickness	No diferences
LFABAX	Note	Note: The three page contract is designated as follows: Page one (top page) – 01.01; Page two (middle page) – 01.02; Page three (last page) – 01.03.
	Visual Examination	Visual- 1) Paperclip-type indented impressions found on pages 01.01 and 01.03 each in the same area of the upper left-hand corner of each document – No paperclip type indented impressions found on page 01.02. 2) Staple holes consistent for location and orientation on each of 01.01, 01.02, and 01.03 only one set of staple present on each of 01.01, 01.02, and 01.03. 3) All handwritten entries written in black ballpoint pen ink, ink lines heavily striated on items 01.01 and 01.03, dramatically much less striated on item 01.02. 4) Based on a preliminary examination the type font, margins and line spacing on each of 01.01, 01.02, and 01.03 appear consistent between each page. (VSC overlay). 5) No physical watermark (thinness or thickness of paper fibers) present on any of 01.01, 01.02, 01.03. 6) Handwritten "JD" initials on items 01.01 and 01.03 are formed in a consistent manner, in general terms – a single stroke "J" top stroke and a single stroke "D" for each of the "D" stroke elements. The handwritten "JD" initials on item 01.02 are written in a different manner, in general terms – a double stroke (retrace) "J" top stroke and a double (retrace) vertical "D" stroke.
	Ultraviolet Light	Ultraviolet Excitation Examination- Examination utilizing 365nm, 312nm, and 254nm wavelength illumination revealed that item 01.02 reacted differently, appeared brighter, than items 01.01 and 01.03. Items 01.01 and 01.03 gave the same visible reflectance amongst themselves, which was different than the visible reflectance of 01.02. Conclusion: 01.02 has dissimilar paper stock than 01.01 and 01.03

TABLE 2

WebCode	Methods/Techniques	Observations
	Infrared Light	Infrared/Infrared Luminescence Examination: 1) Handwritten inks on items 01.01 and 01.03 transmit infrared light at 715nm, the handwritten ink on item 01.02 absorbs infrared light at 715nm. 2) Handwritten inks on items 01.01 and 01.03 display infrared luminescence utilizing the following parameters: Illumination at 400-640 nm with a blocking filter at 725 nm, the handwritten ink on item 01.02 does not display infrared luminescence utilizing the same parameters. Conclusion: 01.02 has dissimilar handwritten ink than found on 01.01 and 01.03. Note: Further testing will be necessary to determine if the Resident and Owner (Agent) inks are similar or dissimilar.
	Indented Writing	Indented Impression (both oblique lighting and Electrostatic detection devise) Examination: 1) Item 01.01 : Paper clip mark at top left hand corner. Item 01.02: no indented impressions of investigative value were found. Item 01.03: Paper clip mark at top left hand corner. Impressions consistent with the handwriting present on item 01.01, which are located as indented impressions in the same general area as found on item 01.01. In addition – indented impressions of the initials "JD" located in the same general area as those found on item 01.02, (8 locations) however the construction of the initials are different than those physically found on the actual item 01.02. indented impression of the entry "100" in the area of the actual entry of "200", which is physically located on the actual item 01.02. indented impression of the entry "25" in the area of the actual entry of "50", which is physically located on the actual item 01.02. indented impression of the entry "20" in the area of the actual entry of "30", which is physically located on the actual item 01.02. indented impression of the entry "#6854" in the area of the actual entry of "#6854", which is physically located on the actual item 01.02.
	Macroscopic/Microscopic Examination	Macroscopic/microscopic- 1) 01.01, 01.02, 01.03 each bears black melted (in appearance) colorant adhering to the surface paper fibers, each with a similar melted appearance to each other. Conclusion: toner – single colorant – Black. 2) All handwritten entries on 01.01, 01.02, 01.03 each bears black (in appearance) colorant adhering to the surface paper fibers, pen ball striations, indented impression at the ink line. Conclusion: ballpoint pen ink – Black
LTNY3Q	Visual Examination	Analyzed the document it was appreciated that each of the texts that make up the full of documents, especially the characters "JD" of the second page of the document show a marked variation in the caliber of their strokes. In addition to the separation, that shows these two graphs in relation to the others.
	Video Spectral Comparator (VSC)	Then we proceed to carry out an analysis of printed documents with the support of video comparator (8000) where the physical behavior of the inks of the documents was analyzed with infrared light where it was evidenced that leaves one and three behave at the same length wave 695 in the infrared, while the second leaf does not have that same behavior in its characters.
M8DVZJ	ESDA	No indented impression is revealed on pages 1 and 2 except the mentions already present on the documents. On page 3, indented impressions from the handwritten mentions on page 1 are revealed as well as indented impressions from none of the pages of the lease agreement. These indented impressions are the same type as the handwritten mentions on page 2 but the amounts are different (100\$, 25\$ and 20\$ instead of 200\$, 50\$ and 30\$)

TABLE 2

WebCode	Methods/Techniques	Observations
	Microscopic Examination	The pages of the lease agreement were produced by electrophotographic systems.
	chemical examination (raman, FTIR, microanalysis-x)	Toners on pages of the lease agreement have the same composition. No defect is observed. Pen inks on pages 1 and 3 are not differentiated between them but are differentiated from the pen ink on page 2. The ink on pages 1 and 3 is composed of dyes whereas the ink on page 2 is composed of pigments.
	FFT2D and optical examination	Their wire marks (paper structure) are the same on the 3 pages. The fluorescence is stronger on page 2 than on pages 1 and 3. This difference is not significant to discriminate the 3 pages.
MAJ66A	Visual examination/ ESDA/ Oblique light	Indented impressions resulting from a trombone were observed on the first and the third pages of the questioned leasing agreement and not observed on the second page of the questioned document. Indented impressions resulting from handwritten entries were located on the third page of the questioned leasing agreement. These indentations marks originate from the first page of the leasing agreement and from an external page to the questioned document. The indented impressions detected from the external page are the numbers: 100, 25, 20. These indentations are located in the same positions as the information indicating the amounts (pet deposit and rent and parking fee) appearing on the questioned leasing agreement.
	Video Spectral Comparator/ Infrared light	Under the wavelength 715nm, the reaction of the ink's pen used to write the handwriting on the second page is different from the reaction of the ink's pen used to write the first and the third pages of the questioned leasing agreement. The ink's pen used to write the handwriting on the first and the third pages of the questioned leasing agreement were not discriminated.
	Raman/Foram 685	The RAMAN spectrum of the handwriting ink on the second page of the questioned leasing agreement is different from the RAMAN spectra of the handwriting ink on the first and the third pages of the questioned leasing agreement. The RAMAN spectra of the handwriting Ink on the first and the third pages of the questioned leasing agreement were not discriminated at 685nm.
	Handwriting Examination	The author of the handwriting (the letters "JD") on the second page of the questioned leasing agreement is different from the person who wrote the handwriting (the letters "JD") on the first and the third pages of the questioned leasing agreement.
ME7PVE	Visual Examination	After examining the questioned document via the naked eye as well as microscopically, all three pages of the questioned document had writing in black ballpoint ink. An impression of a paperclip was also identified into pages 1 and 3 of Q-1. There were no differences noted between the 3 pages of the questioned document when examined under UV lighting.
	ESDA	No impressions were identified into pages 1 and 2 of Q-1. Impressions from Page 1 and an unidentified page were impressed into Page 3. There were no impressions identified from Page 1 or Page 3 impressed into Page 2. Based on the impressed evidence, Page 2 is a substituted page and the unidentified page is a removed page. Based on the impressed writing into Page 3, the removed page contains the amounts of "\$100", "\$25", and "\$20". These impressed amounts were identified in the areas where the pet deposit, monthly pet fee, and monthly parking fee are mentioned in Page 2.

TABLE 2

WebCode	Methods/Techniques	Observations
ML82RC	Visual Examination	Visual examination of the handwriting revealed from the ESDA examination to the handwriting on the questioned item.
	ESDA	ESDA processing of all three pages in Item Q1 front and back. Indentations on Page 3 contained writing not found on Page 2.
	Indented Writing	Indented writing found on Page 3 compared to writing on Page 2.
	Video Spectral Comparator (VSC)	Examination of paper via Ultraviolet light. Revealed all the sheets of paper to be similar. Examination of ink with flood light and spot light. Revealed the ink on Page 2 reacted differently than the ink on Pages 1 and 3.
	Oblique Light	Examination of all three pages via sidelight. Led to discovery of paper clip indentations on Pages 1 and 3.
	Microscopic Examination	Examination to determine if writing ink was original in all instances. Examination to determine the printing process used to create the document. Examination of the staple holes to determine if they aligned together.
	Overlays	Utilizing Adobe Photoshop a 1.955cm per gridline grid was created to examine the alignment of the printed text on all three pages of Item Q1. The same sized text aligned similarly.
MMVEAU	Visual Examination	I reviewed and enlarged the document to notice any differences within the pressure and indentation of the handwriting. I observed that page two had yellow writing under all the amounts and initials.
	Ultraviolet Light	Under the ultraviolet light I noticed that page 1 and page 3 had indentations where the writing was placed whereas page two is a copy opposed to an original document as is page 1 and 3.
	Infrared Light	The original documents, page 1 and 3 under the infrared light illuminated bright blue whereas on page two it was white/grey further proving that Page two of the rental agreement is a copy and not an original. No numbers appear to be altered on any part of the document.
	Magnification	I magnified the numbers on the Rental Agreement and reviewed to see if I was able to see any alterations.
	Indented Writing	I reviewed the indented writing on page 1 and page 3 of the rental agreement. There were no indentations on page two.
MTC3RV	Visual Examination	Noted pages 1 and 3 on document Q-1 have indentations present at the top of the page (left corner), possibly from a paper clip. No indentations noted on page 2 of document Q-1.
	Oblique Light	Nothing further noted.
	Video Spectral Comparator (VSC)	No differences noted between the inked entries on page 1 of document Q-1.
	ESDA	No indentations from page 1 of document Q-1 found on page 2 of document Q-1. Indentations on page 3 of document Q-1 revealed impressions from pages 1 and 2 of document Q-1. Impressions on page 3 of document Q-1 do coincide with written entries on page 1 of document Q-1 with no differences present. Impressions on page 3 of document Q-1 shows a few differences for the entries written on page 2, including a changed initial pet deposit of \$100 (not \$200) (Section 7), monthly pet rent of \$25 (not \$50) (Section 7), and monthly parking fee of \$20 (not \$30) (Section 8).

TABLE 2

WebCode	Methods/Techniques	Observations
MUPJZ3	Video Spectral Comparator (VSC)  Microscopic Examination  Infrared Light  Handwriting Examination	Expertise of security documents, application of luminescence to the examination of documents, NIR absorption and reflection examination of documents for signature comparisons, printing techniques VSC 6000, microscope M216, Foram 685/2.
MXK2N6	Visual Examination  Video Spectral Comparator (VSC)  ESDA	There are marks from a paper clip on page 1 and 3, these marks are missing on page 2.  IR: The luminiscence and absorption of the handwritten parts on page 2 differ from the ones on page 1 and 3.  Indented writing consisting of other fees than the ones on page 2 have been found on page 3 (PETS & PARKING).
MYL8GA	Visual Examination  Video Spectral Comparator (VSC)  ESDA  method of aanalysis of alterattion of documents  Examination method of development writing groves	Analysis method of document alteration (visual analysis, analysis whit VSC). Visual Analysis: Found brand of clip on sheets a 1 and 3, while that the 2 does no present  Analysis whit (VSC). The inks of pen of sheets 1 and they coincide in low behavior infrared liht and filters, while the sheet 2 does not behave the same way to pages 1 and 3  Marks (grooves) were found in sheet 3 with information that does no present sheets 1 and 2. Sheet number 2 does not present marks (grooves) of sheet 1
N38FJP	Video Spectral Comparator (VSC)  Video Spectral Comparator (VSC)	Absorption in the Infrared. Greater Absorption of the inks in the range of 645nm, of the manuscript completion on pages 1 and 3.  Fluorescence in the Infrared. Lower luminescence in the 695nm range with fluorescence filter 515-640 nm, from the pen ink in the manuscript completion on page 2.
NF4EER	Visual Examination  ESDA  Keyence microscop  Regula model 4197	The mark of paper clip is visible on pages 1 and 3 but not on page 2.  The latent mark of paper clip is visible on pages 1 and 3 but not on page 2. The latent image of all the handwritten paraphs "JD" of page 1 were found on page 3 but not on page 2. Additional latent images of handwritten paraphs "JD" were also found on page 3, these paraphs do not correspond to the handwritten paraphs figuring on the "actual" page 2. The findings suggest that these paraphs come from the original substituted page 2.  The morphology of the inked handwritten entries on pages 1 and 3 is similar. The inked handwritten entries of page 2 show a different morphology from pages 1 and 3, suggesting the use of a different ballpoint pen.  All the three pages of the Q1 agreement use a dry magnetic toner.

TABLE 2

WebCode	Methods/Techniques	Observations
	Video Spectral Comparator (VSC)	The ink to fulfill pages 1 and 3 is similar. The ink entries of page 2 show a different behavior using infrared reflection (IRR) and infrared luminescence (IRL) from the ink of pages 1 and 3. UV light illumination shows that the paper of page 2 is slightly different from the paper of pages 1 and 3.
NKFLHH	Macroscopic/Microscopic Examination  ESDA  Video Spectral Comparator (VSC)  Handwriting Examination	Toner technology, Ballpoint pen differences (e.g., color, striations)  Sourced impressions on Exs. Q1-1b, Q1-2b, Q1-3(a and b); Paperclip impression on Exs. Q1-1(a and b) and Q1-3(a and b); Machine-created impressions on Ex. Q1-1(a and b) through Q1-3(a and b)  Differences in paper and ink of Ex. Q1-2a with Exs. Q1-1a and Q1-3a  Writer 1: indications Q "JD" initials on Exs. Q1-1a and Q1-3a and the unsourced indented "JD" initials on Ex. Q1-3a ESDA Lift. Writer 2: indications Q "JD" initials on Ex Q1-2a. Writer 3: indications remaining questioned entries on Exs. Q1-1a through Q1-3a, excluding the dates and signatures on Ex. Q1-3a. The dates and signatures on Ex. Q1-3a and the remaining unsourced indented writing on Ex. Q1-3a ESDA Lift could neither be identified, nor eliminated; Three or less than three writers could not be determined. Limitations: limited amount of characters and comparable entries.
NKWMER	Visual Examination  ESDA  Microscopic Examination  Overlays  Video Spectral Comparator (VSC)  Alterations	3 page stapled document with inked entries  p.1: IW neg, although the impression from what appears to be a paperclip is visible in the upper left corner. p.2: IW neg (no paperclip impression). p.3: IW pos (including paperclip impression)-some impressions are from p.1, some are not accounted for (to include different amounts than observed on p.2), no impressions are from p. 2  Item 1, pp 1-3: Toner format (melted, mounded beads) with inked entries (striations, embossing,  ESDA of p. 3 overlaid on p. 2 revealed different monetary amounts  Spot: 545-675; Longpass=725: p.1: ink luminesces. p.2: ink does not luminesce. p.3: ink luminesces  Alteration Exams: inconsistencies in ink and indented writing between p. 2 and pp. 1 and 3 indicating page substitution of p. 2
NWVBGM	Macroscopic/Microscopic Examination  Video Spectral Comparator (VSC)  Indented Writing	Visual macroscopic and stereoscopic examination revealed differences in writing instrument used to complete the handwritten entries on page 2 vs. pages 1 and 3. Divergences in form/design of initials "JD" noted between page 2 and pages 1 & 3 - the significance of this could not be determined given known specimens were not submitted.  Different spectral responses for the handwritten entries appearing on page 2 versus pages 1 & 3 were observed.  Using both oblique lighting and ESDA instrumental technique, it was determined that some of the entries on page 1 were transferred on to page 3, but not onto page 2. The indentations developed from page 3 showed anachronisms; handwritten entries from another page 2 were evident. These entries showed differences in information from the page 2 in the submitted document.

TABLE 2

WebCode	Methods/Techniques	Observations
NXJYQ3	ESDA	1). No indented impressions of handwriting were observed on pages 1 and 2. 2). Indented impressions of handwriting on page 1 were observed on page 3. 3). Some indented impressions of handwriting of unknown source were also observed on page 3. Those indented impressions had the same positions as those of all the entries on page 2. The indented handwritten entries with the same positions as pet deposit and rent were \$100 and \$25 respectively; and the entry as parking fee was \$20.
	Visual Examination	1). Pages 1, 2 and 3 had similar paper size and colour. 2). Each page contained only two (2) staple holes.
	Oblique Light	1). Pages 1 and 3 contained a paperclip mark but page 2 did not.
	Video Spectral Comparator (VSC)	1). The page layouts, font type and size; letter, word and line spacings of pages 1, 2 and 3 were similar. 2). Under infrared light at around 695nm, all the writing ink on pages 1 and 3 became invisible but those on page 2 remained visible.
	Macroscopic/Microscopic Examination	1). All the printed texts on pages 1, 2 and 3 were made up of tiny black dots, and tiny black dots were also distributed throughout the paper (non-printed area). 2). All the ink lines of the signatures and handwritten entries in pages 1, 2 and 3 are black in colour, bearing striations and gooping. No fiber diffusions were observed.
	Handwriting Examination	1). Signatures (JD) on pages 1 and 3 had significant similarities in the formation of the letters and their writing slant and they were written along the printed lines. 2). Comparing the signatures (JD) on pages 1 and 3 with the signatures on page 2 showed that they had significant differences in the formation of the letters and their writing slant. Furthermore, the signatures on page 2 were written along or above the printed lines. 3). Due to the very limited amount of handwriting on page 2 (numerals only), no comparisons were made with the handwriting on pages 1 and 3.
PBNCMT	Microscopic Examination	Examined Item 1 p1 through p3 microscopically. All printing is toner, all writing is black ball point.
	Indented Writing	Examined Item 1 p1 through p3 using ESDA for indentations. Observed indented writing on Item 1 p3 consistent with Item 1 p1. Observed indented writing on Item 1 p3 that was inconsistent with the writing Item 1 p2. No indented writing was observed on Item 1 p1. No indented writing of Item 1 p1 was observed on item 1 p2 (as would be expected, since indented writing of Item 1 p1 was observed on Item 1 p3).
	Oblique Light	Examined Item 1 p1 through p3 using sidelight. Paper clip impression observed on Item 1 p1 and p3. No paper clip impression was observed on Item 1 p2.
	Video Spectral Comparator (VSC)	Examined ink and paper optical properties on Item 1 p1 through p3. Optical properties of Item 1 p1 through p3 paper consistent. Optical ink properties of Item 1 p1 and p3 different than optical ink properties of Item 1 p2.
PBVLX9	Microscopic Examination	Original inked entries, document printed using toner technology, one set of staple holes on Items 1.1, 1.2 and 1.3, paper clip indentations on Items 1.1 and 1.3. Handwriting comparison on the numerals and initials. Common authorship on the numerals on Items, 1.1, 1.2 and 1.3. Probable that "JD" initials on Item 1.2 are a different writer that those appearing on Items 1.1 and 1.3.

TABLE 2

WebCode	Methods/Techniques	Observations
	Video Spectral Comparator (VSC)	IR Reflectance on Items 1.1 and 1.3 ink drops out and Item 1.2 ink remains visible. IR Luminescence on Items 1.1 and 1.3 ink luminescences and ink on Item 1.2 does not. Ultra Violet examination shows no visual differences between Items 1.1, 1.2 and 1.3. Side lighting examination shows one set of staple holes on Items 1.1, 1.2 and 1.3. Paper clip indentations on Items 1.1 and 1.3.
	ESDA	Items 1.1, 1.2 and 1.3 processed. No indented impressions found on Items 1.1 and 1.2. Indented impressions from Item 1.2 were located on Item 1.3. ESDA lift were made from Items 1.1, 1.2 and 1.3 and sub-items were created of the lifts identified as Items 1.1.1, 1.2.1 and 1.3.1.
PJBAQP	Infrared Light	The infrared light was use to determine la physical reaction of the ink in the handwriting. It was establish that they were two types of reaction, transparent ink with the infrared and no transparent ink with the infrared light.
	Handwriting Examination	The handwriting of the letters JD was analyze within the whole document. 1-6 from page 1, and 15-21 from page 3 did not correspond with the ones in 7-14 from page 2.
PNNDX9	Video Spectral Comparator (VSC)	a) At least two different kinds of inks/ writing instruments (pens) have been used to write on item no. 01. b) Page 01 & 03 have been filled using one kind of ink/ writing instrument (pen), while page 02 has been filled using another kind of ink/ writing instrument (pen).
	ESDA	a) Indentations corresponding to the writing on page 01 as well as another page were developed on page 03. b) Indentations developed on page 03 did not correspond to the writing on page 02. c) No indentations corresponding to the writing on page 01 were developed on page 02. d) The original second page of the three-page lease agreement was substituted for the present second page. The contents of the removed page deciphered from the page 3 were as follows: i. In clause no.7, the deposit amount was \$100 (instead of \$200 as mentioned in present second page), and monthly rent was \$25 (instead of \$50 as mentioned in present second page). ii. In clause no.8, the monthly parking fee was \$20 (instead of \$30 as mentioned in present second page).
PW6R3Y	Macroscopic/Microscopic Examination	The ink of the six "JD" initials on page 1, and the seven "JD" initials, resident's signature and date of resident on page 3 appeared to be of a darker shade of black with fewer striations than the other handwritten entries on the pages 1 and 3. The ink of the writing on page 2 also appeared to be of a dark shade with fewer striations, and appeared to be different in the shade of black from the entries on pages 1 and 3.
	Microscopic Examination	The writing in the lighter shade on pages 1 and 3, and the writing on page 2 showed circles written in a clockwise direction and horizontal bar from right to left. The writing in the darker shade on pages 1 and 3 showed the horizontal bar from left to right.
	ESDA	Writing impressions were observed on the ESDA lift of page 3. A few of these impressions ("JD" initials) were found to correspond to the writing on page 1. Most of the impressions did not correspond to the writing on page 2, e.g. impressions of "100" and "25" were lifted from page 3, corresponding to the area of item 7 in page 2, but the handwritten entries were "200" and "50" respectively on page 2. No significant impression were observed on the ESDA lifts of pages 1 and 2.
	Video Spectral Comparator (VSC)	The ink entries on pages 1 and 3 were found to be different from those on page 2 in IR luminescence and IR reflectance.

TABLE 2

WebCode	Methods/Techniques	Observations
Q2DN8L	Visual Examination	Paperclip impression on pages 1 and 3 but absent on page 2. Pages 1-3 stapled (no indications of second set of staple marks). Pages 1-3 similar printing technique
	Oblique Light	Indented impressions visible on page 3. Pages 1 and 2 – no indented impressions of significance
	ESDA	Pages 1 and 2 – no indented impressions of significance. Page 3 – impressions from page 1 and further impressions in similar positions to the entries on page 2 but noted not to be from page 2. Where on page 2 the entry in Section 7 was \$200, the impression in that position on page 3 was \$100. Where on page 2 the entry in Section 7 was \$50, the impression in that position on page 3 was \$25. Where on page 2 the entry in Section 8 was \$30, the impression in that position on page 3 was \$20.
	Video Spectral Comparator (VSC)	When viewed under UV @ 254nm, there was a visual difference between the page 2 paper and pages 1 and 3 paper. When viewed under IR Absorbance (from 630nm – 1000nm) the handwritten entries on page 2 showed different IR properties compared to the handwritten entries on pages 1 and 3. When viewed under IR Luminescence (445-675nm) the handwritten entries on page 2 showed different IR properties compared to the handwritten entries on pages 1 and 3.
Q8WCLL	Visual Examination	To the naked eye and with the use of magnifying glass 10 X is not evidencio any type of alteration in the document "Leasing contract"
	Magnification	To the naked eye and with the use of magnifying glass 10 X is not evidencio any type of alteration in the document "Leasing contract"
	Video Spectral Comparator (VSC)	With the use of the VSC-8000 is evidencio document contract of lease to the be exposed the second sheet to light infrared the manuscripts produced in instrument writer pen disappear to view change in the other two sheets manuscripts made in instrument writer pen to be exposed to light infrared is preserved at the sight.
QG7D4H	Visual Examination	One staple hole set was noted in the same position on each of the three pages.
	Macroscopic Examination	Printing process of each page had laser technology.
	Infrared Light	The ink used for the entries on page two had a different ink formula than on pages one and three.
	Indented Writing	An IMEDD was used to recover writing possibly indented on the pages. There was a lack of indentations from page one onto page two. By itself, it would not indicate an alteration occurred on the Agreement. However, indentations were noted on page three that were not consistent with the handwritten entries from page two. The indentations of the initials were different in design and location from the existitng page two. Another inconsistency was the indentation of the dollar amount for the monthly parking fee from the numeric amount shown. The visible amount shown was \$30 in contrast to the indentation amount of \$20. The evidence clearly supported the contention of an alteration to the document.
QHDDMD	Microscopic Examination	The printed text on each page was produced by a laser printer used black toner. The colour of the writing ink used for the initials "JD" on page 2 is different from those that were used on pages 1 and 3.
	Video Spectral Comparator (VSC)	The optical properties of the writing ink used for the initials "JD" on page 2 are different from those that were used on pages 1 and 3. The optical properties of paper sheet 2 differ from paper sheet 1 and 3.

TABLE 2

WebCode	Methods/Techniques	Observations
QU7X46	Macroscopic/Microscopic Examination	When exposing the surface of the paper to ultraviolet radiations the spectral responses show us that the tonalities or whiteness of page number 1 and 3, differ from the whiteness of page number 2.
	Ultraviolet Light	Analysis of ink when exposing texts or manuscripts to infrared light rays. minimum range of 645 n.m. maximum range 715 n.m. it is possible to observe that the manuscripts with page numbers 1 and 3 were filled, in the maximum range disappear; while in the maximum range the manuscripts which page 2 was completed does not disappear, remains intact.
	Infrared Light	
QUWYMR	Oblique Light	Noted paper clip indentations on pages 1 and 3, but not on page 2. Also noted page 2 contained no observable indentations, but page 3 did. Would have expected indentations on page 2 from page 1.
	ESDA	ESDA of pages 1 and 2 negative. ESDA of page 3 contained indented writing from page 1, and unaccounted for indented writing which appeared to be content similar to what was expected from page 2. However, the unaccounted for indented writing was not consistent with the writing on page 2. No indented writing was observed on page 3 from page 2.
	Video Spectral Comparator (VSC)	The optical characteristics of the ink on pages 1 and 3 are consistent with each other, but are inconsistent with the ink on page 2.
RBUBFB	Visual Examination	No unfilled staple holes. No creases near the staple indicating the pages were never folded strongly back over the staple when the pages were turned. Paper clip impression in upper left corner of pages 1 and 3. No paper clip impression on page 2.
	Ultraviolet Light	No difference in the optical brightness of the pages. No evidence of chemical erasure.
	ESDA	Indented writing developed on the front of page 3. No indented writing developed on the fronts of pages 1 or 2. The reverse sides of all three pages developed impressions of the writing written on the front of each of the pages. See notes for specifics. [Attachment not provided by participant]
	Microscopic Examination	All three pages printed with black toner. No evidence of mechanical erasure. No evidence of unfilled staple holes.
	Oblique Light	Indented writing observed on page 3. No evidence of mechanical erasure.
	Video Spectral Comparator (VSC)	The pen used to write the entries on page 2 is different from the pen used to write the entries on page 1 and/or page 3 (infrared examination). No evidence of chemical or mechanical erasure. No watermarks. Paper clip impression in upper left corner of pages 1 and 3. No paper clip impression on page 2.
	Overlays	Created an overlay using a transparent plastic film. Impressions developed on page 3 are consistent with entries on page 1. Impressions developed on page 3 are not consistent with entries found on page 2. None of the entries on the current page 2 were developed on page 3.
	Transmitted Light	No watermarks observed. No evidence of mechanical or chemical erasure or "white out".
	Infrared Light	The pen used to write the entries on page 2 is different from the pen used to write the entries on page 1 and/or page 3.
	Handwriting Examination	There was a limited amount of handwriting available for comparison and the writing was simplistic. It wasn't possible to perform a proper comparison.

TABLE 2

WebCode	Methods/Techniques	Observations
RHEWEY	Video Spectral Comparator (VSC)	To determine optical differences in paper and inks.
RKWH4	Microscopic Examination	Used to observe in detail: morphology of printed characters, printing system, search for marks or individualizing print traces, as well as data filled with a ballpoint pen.
	Overlays	Overlap is made between the sheets that constitute the contract, in order to establish if they coincide edges, margins, size of texts, among others.
	Video Spectral Comparator (VSC)	Used to observe the spectral reaction of the inks used for the creation of the document.
	Juxtaposition	Used to observe simultaneously which marks or imprints of the printing system used, present in the three pages, are found in the same way in each one of them.
RRW8DZ	Visual Examination	The questioned document was received stapled. I removed the staple on 3/13/19.
	ESDA	Indented writing was recovered on page 3 that can be sourced to page 1 and another document that has similar writing entry formatting as page 2. In addition, there was no writing impressions on page 2 from page 1 writing. No impressions from the writing on page 2 was present on page 3.
	Oblique Light	Observed what appears to be an impression of a paper clip on pages 1 and 3 at the top left corner, but this impression was not present on page 2.
	Video Spectral Comparator (VSC)	The questioned document was examined for optical ink properties. The writing ink entries on pages 1 and 3 appears to be optically different than the ink entries on page 2. This is indicative of the use of different writing instruments on page 2 from pages 1 and 3. No discernable differences were observed in the paper comparison of all these pages.
	Macroscopic/Microscopic Examination	The writing ink entries on pages 1 and 3 are black ink(s) that have a reddish hue. The writing ink entries on page 2 is a black ink with a neutral tone. The printing process on the 3 pages appears to be toner. The JD initials and resident signature on pages 1 and 3 appear to be prepared with a heavier pen pressure in comparison to the other writing on pages 1 and 3 and with the JD initials and writing on page 2.
	Overlays	Observed and deciphered for the source of writing and indented writing between the ESDA lift page 3 and the other questioned pages. Indented writing on page 3 was sourced from the writing on page 1. There were unknown indented writings on page 3 that cannot be sourced from page 2, but the indented writings align in formatting and similar information in the allotted entry areas as page 2. The indented writings read 100, 25, JD (8 times), #6854, and 20. Therefore, questioned page 3 was in contact with another unknown document that has similar formatting as questioned page 2.
	Handwriting Examination	A handwriting comparison was made on the "JD" initials. There were consistent handwriting features and characteristics of the "JD" initials on pages 1 and 3 that were dissimilar to the "JD" initials on page 2. The following are dissimilarities: Page 1 & 3: horizontal stroke in "J" is shorter vs. page 2: longer. Page 1 & 3: tick on the right side of horizontal stroke of the "J" vs. page 2: no tick. Page 1 & 3: heavy pen pressure vs. page 2: less pen pressure. Page 1 & 3: "D" leans back vs. page 2: straight. It was noted that the handwritten "JD" initials on page 2 had indications of inconsistency with the handwritten "JD" initials on pages 1 and 3.

TABLE 2

WebCode	Methods/Techniques	Observations
RUCTMR	ESDA	Q1.3 Front bears unsourced impressions that appear to read: 25, 100, JD, #6854, 20, JD, JD, JD, JD, JD, JD, JD. The unsourced impressions are of similar text (excluding "20", "25" and "100") and are in a similar location as the original writing found on Q1.2 but cannot be sourced to this original writing. The unsourced impressions "25" and "100" are in a similar location as the original writing "50" and "200" found on Q1.2. The back of Q1.1-Q1.3 bear similar indentations from what appear to be paper transport mechanism marks (See ESDA Paper Transport Marks Overlay). Q1.1 and Q1.3 bear impressions of an apparent paper clip that does not appear on Q1.2.
	Handwriting Examination	The questioned "JD" initials on Q1.1-Q1.3 as well as the unsourced writing on the Q1.3 ESDA lift were compared side by side with notes taken on charts of the original evidence. Blue arrows were used to denote similarities and red arrows were used to denote dissimilarities. Q1.2 to Q1.1 and Q1.3: There were many dissimilarities noted between the "JD" initials on Q1.2 compared to "JD" initials on Q1.1 and Q1.3, including letter form structure (a retrace in letter structure of some of the letter J's (cross stroke) and D's (vertical staff) on Q1.2 which is not found on these letters on Q1.1/Q1.3). See writing notes with arrows. Rendered a probable opinion that the writer of the "JD" initials on Q1.1/Q1.3 did not write the "JD" initials on the Q1.2 document. The limited amount of writing to be compared (initials consisting of only a 2-letter combination) hindered the examination and precludes a more conclusive opinion. Q1.2 to ESDA lift Q1.3 F: There were many dissimilarities noted between the "JD" initials on Q1.2 compared to the unsourced "JD" initials on the front of the Q1.3 ESDA lift. See writing notes with arrows. Rendered a probable opinion that the writer of the "JD" initials on Q1.1/Q1.3 did not write the unsourced "JD" initials on the Q1.3 F ESDA lift. The limited amount of writing to be compared (initials consisting of only a 2-letter combination) hindered the examination and precludes a more conclusive opinion. Q1.1 and Q1.3 to ESDA lift Q1.3 F: There were many similarities noted between the "JD" initials on Q1.1 and Q1.3 compared to the unsourced "JD" initials on the front of the Q1.3 ESDA lift. See writing notes with arrows. Rendered a probable opinion that the writer of the "JD" initials on Q1.1 and Q1.3 wrote the unsourced "JD" initials on the Q1.3 F ESDA lift. The limited amount of writing to be compared (initials consisting of only a 2-letter combination) hindered the examination and precludes a more conclusive opinion. [Attachment not provided by participant]
	Video Spectral Comparator (VSC)	Q1.1 and Q1.3 - writing ink similar response. Transmits/ink appears to disappear. Q1.2 - writing ink absorbs/ink darkens. Different response than writing ink on Q1.1 and Q1.3. Q1.1-Q1.3 UV Exam - Similar reaction.
	Thickness	Q1.1-Q1.3 paper thickness = .11 mm checked by Checkone by Electromatic paper caliber.
	Microscopic Examination	Machine printing on Q1.1-Q1.3 = toner. Black ballpoint ink.
	Staple	Q.1.1-Q1.3 submitted stapled together. Staple removed for examination purposes. Similar correlating staple holes located on documents.
T2XRE8	Visual Examination	VSC: Different IRR and IRL response of ink on page 2 vs. pages 1 and 3.

TABLE 2

WebCode	Methods/Techniques	Observations
	ESDA	ESDA: Impressions of page 1 and 'different' page 2 entries located on page 3. Based on ESDA results: A 'new' page 2 has been substituted, complete with new entries, including initials and substantive changes (see below) [Table 3 - Conclusions]. Original page 2 entries reflect substantive changes from current page 2 in following areas: Paragraph 7: Original page 2 entry was '100' and '25' vs. present '200' and '50'. Paragraph 8: Original page 2 entry was '20 in parking fee, vs. present '30.
	Video Spectral Comparator (VSC)	No discernible evidence of other alterations to pages 1 or 3 of Agreement.
	Microscopic Examination	
	Oblique Light	
T3G69N	ESDA	Indented Writing
	Video Spectral Comparator (VSC)	Alternate light, UV/IR
	Microscopic Examination	Printing Process, Binding marks, Ink characteristics.
	Visual Examination	Size and design of Document/Paper
T7XCV3	Macroscopic/Microscopic Examination	with regard to the handwriting of the initials "JD" they have the same graphic origin, 1 and 3, not in sheet 2.
	Video Spectral Comparator (VSC)	When exposing the document in the infrared light spectrum to 725 nanometers, it is observed that sheets 1 and 3, react in a similar way; not so, page 2
	ESDA	Furrows is revealed on sheet 3, of first sheet and another furrows that are not found in the current sheet two
	Handwriting Examination	the same as in the described one of the method macroscopic/microscopy examination is observed
	DOCUMENT ALTERATION ANALYSIS METHOD	The same as in the described one of the method Video Spectral Comparator (VSC)
	furrows development method	the same as in the described one of the method ESDA
T8RZBC	Macroscopic/Microscopic Examination	Showed all pages are toner printed form with handwritten details in black ballpoint pen. Font and sizing consistent on all pages.
	Video Spectral Comparator (VSC)	Examination of ballpoint pen inks shows that the inks on pages 1 & 3 are consistent in visual appearance and under IRL, however, the ballpoint ink on page 2 is visually similar but has a different reaction under IRL. Substrate examination under transmitted and UV light shows similar appearance of all 3 pages.
	ESDA	ESDA examination showed latent indentations on page 3 that could be sourced to page 1, and unsourced indentations. No latent indentations found on page 2 that could be sourced to either page 1 or page 3.
TAYFMP	Macroscopic/Microscopic Examination	Toner technology used to prepare three page document. Observed paper clip impressions on pages 1 and 3. Handwritten "JD" initials on page 2 that showed differences from the "JD" initials on pages 1 and 3.
	ESDA	Indented writing observed on page 3. Handwritten impressions from page 1 and additional dollar amounts for sections 7 and 8 from the original missing page 2.

TABLE 2

WebCode	Methods/Techniques	Observations
	Transmitted Light	No watermarks observed.
	Video Spectral Comparator (VSC)	Ink observations on page 2 that were optically different from pages 1 and 3.
TCB49A	[No Methods Reported.]	
TVGMWW	ESDA	Indentations from the handwriting on the top page were developed on the bottom page indicating that the bottom page was beneath the top page when the handwritten entries on the top page were written. Handwriting from the top page, however, was not detected as indented writing on the middle page indicating the middle page was not beneath the top page when the handwritten entries on the top page were written. The handwritten entries on the middle page were not the source of the indented handwriting impressions that were developed on the bottom page, indicating that the bottom page was not beneath the middle page when the handwritten entries on the middle page were written. Indented impressions of the handwritten numerals "25", "100" and "20" were developed on the bottom page of Exhibit Q1. These indented impressions did not originate from the top or middle pages of Exhibit Q1 but occupy the same relative positions as the disputed handwritten entries "50", "200" and "30" visible on the middle page of Exhibit Q1. Accordingly, the indentations of the numerals "25", "100", and "20" on the bottom page appear to have been created from handwriting performed on the original Exhibit Q1 middle page.
	Video Spectral Comparator (VSC)	When examined under exactly the same infrared illumination and filtering conditions, the ink used for the handwritten entries on the middle page remained visible while the ink used for the handwritten entries on the top and bottom pages became invisible. This indicates that a writing ink with different properties was used for the handwritten entries on the middle page than was used on the top and bottom pages. No evidence of alteration was detected regarding the disputed handwritten entry on the top page of "1200" dollars per month for rent.
	Oblique Light	The top and bottom pages of Exhibit Q1 bear clear and distinct indented impressions that appear to have been made by a paperclip, however, no evidence of a paperclip impression was detected on the middle page. This indicates that the Exhibit Q1 middle page was not fastened together with the top and bottom pages by a paperclip. No evidence of disturbance was detected regarding the staple that fastens the top, middle, and bottom pages together. These observations indicate that the Exhibit Q1 document was at one time held together using a paper clip but was later stapled together after the current middle page was substituted for the original middle page.
TXKWRJ	Visual Examination	It is found that in the second sheet of the contract, it presents differences in the internal characteristics and physical result of the pen stroke compared to the characteristics observed in the first and third pages of the contract
	Video Spectral Comparator (VSC)	The contract pages are exposed to infrared fluorescence radiation at 695 nm, finding that the pen lines of the second sheet react with fluorescence and the first and third sheets do not show defluorescence reaction in the lines.
	Handwriting Examination	Observing the characteristics of the strokes that make up the letters "JD" are differences at the level of construction of writing, terminations and spatial distribution of them in the graphic space.

TABLE 2

WebCode	Methods/Techniques	Observations
U3GHFG	Visual Examination	Three pages, letter size, mostly machine printed with handwritten entries in black ink. The document was received with a staple, the set of staple holes in the top left corner is aligned when the pages are stacked upon each other. The reverse side of page 3 has an additional set of impressions between the staple holes from the legs of a staple that bent into the page. Pages 1 and 3 have an impression that appears to be from a paper clip.
	Microscopic Examination	Machine printed areas done by dry, black electrophotographic toner. No significant printing defects from the electrophotographic process were observed on these pages. The handwritten ink entries on the second page have some visual differences to the ink on the other pages.
	Video Spectral Comparator (VSC)	Optical differences between the handwritten ink on page 2 and the handwritten entries on pages 1 and 3 were observed. This does not imply that pages 1 and 3 were prepared with the same ink or pen.
	ESDA	The obverse sides of pages 1 and 2 were observed to have no observable indentations. The obverse side of page 3 was observed to have impressions from the handwritten entries on page 1 and unsourced entries from another document not submitted to the laboratory. It was observed that the unsourced entries were positioned in a similar manner to those on page 2, and that the content that was in a similar position to the entries in the first paragraph was deciphered to be "100" and "25". The impressions on pages 1 and 3 that appear to be from a paper clip were seen to develop. The reverse sides of pages 1-3 disclosed a roller mark that traversed the longer length near the centre of the page.
	Magneto-Optical Visualiser (Regula MagMouse 4197)	Magnetic toner was detected on all three pages of Q1.
	Radiography (Faxitron UltraFocus X-ray cabinet)	Radiography via x-rays of the three pages of Q1 disclosed that the toner was of a denser material than the paper.
U6M34G	Visual Examination	Staple holes present on 3 pages: same dimension, same orientation. Paper clip impression: indentations present on page 1 and 3, indentations absent on page 2
	Microscopic Examination	By stereomicroscopy: 3 pages produced by electrophotography with black toner only, handwriting and initials produced by black ballpoint pen
	Magmouse	Qualitative detection of magnetic properties of toner: 3 pages produced by magnetic black toner
	ESDA	Used to detect, develop and record impressions of the front side of the 3 pages. Page 1 : paper transport markings only. Page 2 : paper transport markings only. Page 3 : indentations + paper transport markings. Latent indentations on page 3, as follows: various indentations sourced to the visible entries on page 1, including the "40" entry for utilities, various unsourced indentations of entries were found in the locations where the visible entries on page 2 would be expected. Note that no indentations corresponding to the actual visible entries on page 2 were found. The unsourced entries differed from the visible entries on page 2 as follows: pet deposit "100", and not "200" as shown on page 2. additional monthly rent "25", and not "50" as shown on page 2, monthly parking fee "20", and not "30" as shown on page 2. The paper transport markings are on page 2 are different from the markings on pages 1 and 3.

TABLE 2

WebCode	Methods/Techniques	Observations
	Video Spectral Comparator (VSC)	Ink used on pages 1 and 3 exhibit similar luminescing properties which are different from the properties of the ink used on page 2. A different ballpoint ink was used to produce the handwritten entries on page 2, relative to pages 1 and 3. The entry '40' on page 1 (par. 5) has the same luminescing properties than the other written entries on page 1.
	Overlays	Typography comparison made by creating layers in an imaging software (Photoshop). Same font and size used for the 3 pages. Margins comparison. Same margins used for the 3 pages.
	Handwriting Examination	Consistent difference in the handprinted 'J' forms on page 2, relative to pages 1 and 3.
U8PPWK	Visual Examination	A visual examination revealed all three pages were written with wet ink. The initials "J" "D" on all three pages have natural variation, however, the top of the letter "D" on page 2 were farther apart than on page 1 and 3. Only one staple had been used on all three pages. The ink used on pages 1 and 3 appeared to be slightly darker than on page 2.
	ESDA	No describable latent images were noted on any of the 3 pages.
	Ultraviolet Light	No changes were noted with ultraviolet light. All pages fluoescaped at the same rate. There is no indication that paper stock is different.
	Infrared Light	Ink on pages 1 & 3 were not visible using IR light. The ink on page 2 was visible with IR light. This is an indication that a different ink was used to complete page 2.
ULA8N4	Visual Examination	The three-page agreement was printed and filled out with using black ballpoint pen ink. An impression of a paper clip was noted near the top left of pages 1 and 3, but not page 2. The staple was removed and each page only had one set of staple holes.
	Macroscopic/Microscopic Examination	All three pages were prepared using a laser printing process.
	Ultraviolet Light	Pages 1 and 3 luminesced more brightly than page 2 at 254, 313, and 365nm.
	Infrared Light	The inked entries on pages 1 and 3 transmitted at 735nm. The inked entries on page 2 did not.
	Oblique Light	The paper clip impression on pages 1 and 3 were photographed with both left and right oblique light. Not other indentations were noted.
	Transmitted Light	No alterations were noted using transmitted light.
	ESDA	Handwriting indentations were recovered from page 3, but not from page 1 and 2.
	Overlays	Some of the indentations from page 3 could be sourced to page 1. Several of the remaining indentations were unsourced, but are consistent with the type and location of information as is written on Page 2. The "100" indentation is in a similar location as the inked "200"; the "25" indentation is in a similar location as the inked "50"; and the "20" indentation is in a similar location as the inked "30."
UPEQYH	ESDA	ESDA examination on page 3 revealed indented writing consistent to handwritten entries on page 1 and also indented writing from an unknown source. The deciphered indented writing from the unknown source were different from the handwritten entries on page 2. Indented writing consistent with the handwritten entries on page 1 were observed on page 3 but not observed on page 2.

TABLE 2

WebCode	Methods/Techniques	Observations
	Video Spectral Comparator (VSC)	1)Clip mark was observed clearly on pages 1 and 3 under side light. However, clip mark was not observed on page 2. 2)Similar staples marks were observed on pages 1, 2 and 3. 3)The handwritten entries on page 1, 2 and 3 showed differences under infrared luminescence. At wavelength 515-640nm with filter RG695, the ink on page 2 did not fluoresce while the ink on pages 1 and 3 fluoresce. 4)The handwritten entries on page 2 remained under flood light with filter RG645 while handwritten entries on pages 1 and 3 disappeared. 5)The paper of pages 1, 2 and 3 showed no differences under UV light.
	Microscopic Examination	1)The printed entries on pages 1, 2 and 3 showed similar type of font, size and formatting. 2)These pages were printed using similar type of printing process consistent with being printed using electrophotographic printing process.
	Handwriting Examination	On comparison, handwriting (except for initials "JD")on pages 1, 2 and 3 (except for date below RESIDENT'S SIGNATURE) showed similarities in handwriting characteristics to each other indicating of a common authorship. Handwriting examination of initials "JD" was of limited handwriting characteristics. Therefore, I was not able to form an opinion on the authorship of these initials.
UQM4FK	ESDA	Indented writing from page 1 and an unknown document was found on page 3. No indented writing was found on pages 1 and 2. Paper clip marks noted on page 1 and 3 nothing on 2
	Video Spectral Comparator (VSC)	Optical differences noted with the ink on Page 2.
UQWQE9	Macroscopic Examination	The three pages were examined macroscopically and it was determined that the pages were produced using toner technology. The pages bear original inked writing
	Video Spectral Comparator (VSC)	IRR and IRL examinations of the three pages determined that the optical characteristics of the inked entries on pages 1 and 3 are consistent. The inked entries on page 2 do not share the same optical characteristics of page 1 and 3
	Indented Writing	Pages 1 and 2 bear no indentations of evidential value. There are indentations on page 3 that are unsourced and do not originate from pages 1 or 2. These indentations are "100" and "25" and "20" and "JD". There are indentations on page three that were sourced to page 1 but do not appear on page 2
UWR3PN	Microscopic Examination	identical deposit characteristics of the toner, impressive track of a paperclip on the first and third page next to the stable, not on page 2
	Infrared Light	dye of the used pen on page 2 is different to the pages 1 and 3
	ESDA	different track on page 3 at point 7 (original 25/100, now 50/200) and 8 (original 20, now 30)
	magnetism	toner of all pages is magnetizable
UX2WKN	ESDA	Indented writing on Item Q1 page 3 not consistent with writing observed on page 2.
	Video Spectral Comparator (VSC)	Item Q1 page 2 ink reacted differently (optically) compared to the ink(s) on pages 1 and 3.
	Oblique Light	Indented writing; Paper clip indentations present on Item Q1 pages 1 and page 3 not observed on page 2.

TABLE 2

WebCode	Methods/Techniques	Observations
	Microscopic Examination	Printing process determination
	Handwriting Examination	Limited assessment of consistency of initials on pages 1 through 3.
	Transmitted Light	Watermark exam
	Visual Examination	Physical exams
UYVK2Y	Ultraviolet Light	The uv reflection degree of the second page was different from the first and third pages.
	Infrared Light	The infrared light reflection for the second page ink differs from the first and third pages.
	Microscopic Examination	Handwriting characteristics for the second pages differs from the first and third pages
V2X3DY	Microscopic Examination	The same type of printing and good quality is observed in the questioned document. The pen writing that appears integrated differs in graphic origin in sheet # 2, with respect to sheets # 1 and # 3.
	Video Spectral Comparator (VSC)	The pen ink used in the handwriting is absorbed in the whole sheet # 2, unlike the sheets # 1 and # 3, in these there are react
	ESDA	Sheets # 1 and # 2 do not show furrows, unlike sheet # 3, in which letters and quantities appear that do not coincide with the writing of sheet # 2.
	Writing analysis method	The handwriting in sheet # 2, differs in its graphic origin with respect to the handwriting that appears in the sheets # 1 and # 3
	Alteration analysis method	The analysis of the questioned document reveals that there is sufficient evidence to determine alteration.
V3CGTL	Microscopic Examination	No signs of additional staple holes which might indicate that pages were substituted. No signs of paper disturbance, mechanical or chemical erasures or obliteration observed at the handwritten entries against 'UTILITIES', 'PET' and 'PARKING'. All three pages were printed using toner.
	Transmitted Light	No significant differences in paper weave pattern
	Video Spectral Comparator (VSC)	No significant differences in optical properties of paper. Fluorescence observed for the handwritten text on Page 1 and Page 3. No fluorescence observed for the handwritten text on Page 2.
	Oblique Light	No meaningful indentations observed on all three pages.
	ESDA	Page 3 had impressions that corresponded to the handwritten text on page 1, this shows that the text on page 1 was written with page 3 beneath it. Page 3 had impressions that did not correspond to the handwritten text on page 2 (different content with similar relative position). No impressions of the handwritten text on page 2 was found on page 1 or page 3. This suggests the presence of another page with handwritten text corresponding to the impressions observed on page 3 was written with page 3 beneath it.
V8LMHZ	ESDA	The grooves revealed on the obverse of the third sheet do not coincide with the handwritten texts of the second sheet analyzed that make up the document.
	Video Spectral Comparator (VSC)	When applying the IR light on each sheet that makes up the document, a variation was observed regarding the fading of the written texts between the sheet.

TABLE 2

WebCode	Methods/Techniques	Observations
	Method for the examination of alterations Method for developing grooves	Method for the examination of alterations. Method for developing grooves
VCKUCB	Visual Examination	No evidence found
	Microscopic Examination	No evidence found
	Oblique Light	No evidence found
	Ultraviolet Light	No evidence found
	Infrared Light	Difference in IR absorption between page 1 & 3 and page 2 (pen ink).
	ESDA	No latent pressure pattern of page 1 found on page 2. Latent pressure pattern of page 1 and 2 found on page 3. Difference between examined page 2 and latent pressure pattern of (original) page 2 detected.
	Overlays	Signatures (JD) on examined page 2 not congruous with latent pressure pattern of (original) page 2 found on page 3.
VDMFFK	Visual Examination	The document was stapled when received. Upon initial visual examination, it was noted there was an indentation in the first and last page of the document caused by a paperclip. Page 2 of the document did not have a paperclip indentation.
	Microscopic Examination	The print process is the same on all three pages. However, differences were noted in the comparison of initials. The initials on page 2 were written differently than those on pages 1 and 3. The J's on pages 1 and 3 had a consistent curvature to the tail at the base of the J, while those on page 2 did not. Also, the D's on pages 1 and 3 were written with the stem of the "D" flowing down, and up to the right, ending at the top of the D. The D's on page 2 are written the opposite way. Under microscopic examination, one can see this through the striations caused by the ball point pen.
	Handwriting Examination	Examination of the handwritten initials on page 2 compared to those of pages 1 and 3 show difference. The initials on page 1 and 3 are darker compared to the ones on page 2. Oblique lighting to the back of the pages shows considerably harder pressure used in writing those initials. Also, the spacing between the two letters is larger on page 2 than those on page 1 and 3. Other differences are noted above from the microscopic examination.
VGWWX7	Visual Examination	The 1. and the 3. page contains paper clip traces/indentation however the second page does not.
	Ultraviolet Light	The UV-luminescence of the 2. page is different - a bit brighter - from the others.
	Video Spectral Comparator (VSC)	The normal colour and the IR-luminescent features of the handwritten parts of the 1. and the 3. pages are similar but the 2. page handwritten elements are totally different.
	ESDA	The 2. page does not contain handwritten indentations. The indentation from the 2. page to the 3. page are in wrong positions on the 3. page.
VN3K93	ESDA	Indentations from page 1 indent onto front of page 3 but not onto page 2.
	Oblique Light	Impression of paper clip seen on pages 1 and 3 but not on page 2.

TABLE 2

WebCode	Methods/Techniques	Observations
	Video Spectral Comparator (VSC)	Different ink responses to light sources using VSC determined a different ink was used for the handwritten details on page 2 compared to the details on pages 1 and 3.
VPPAVK	Macroscopic/Microscopic Examination	All printed entries on all three pages have been produced using a black toner process. All handwritten entries on all three pages have been produced using black ballpoint ink. No evidence of disruption to the surface of the pages was detected.
	Indented Writing	Using oblique lighting and the Electrostatic Detection Apparatus: Indentations originating from the entries on Q1a were detected on Q1c, but not Q1b. Indentations originating from an unknown source were detected on Q1c, these indentations have a similar format and content to the entries on Q1b, however, some of the numerical values differ. Indentations originating from a paper clip were detected on Q1a and Q1c, but not Q1b.
	Video Spectral Comparator (VSC)	Using infrared reflectance and infrared luminescence: The black ballpoint ink entries displayed consistent optical properties within each individual page. Comparing the inks between the pages: The black ballpoint inks on Q1a and Q1c displayed the same optical properties, indicating that these inks have originated from the same source, or another source with similar optical properties. The black ballpoint inks on Q1b displayed different optical properties to the inks on Q1a and Q1c and therefore a different pen has been used to produce the entries on Q1b.
W2CQEQ	ESDA	The front and backsides of pages 1 through 3 were examined using the Electrostatic Detection Apparatus (ESDA). A control was run and work correctly with each of the six examinations. Indented impressions were visualized on page 3 that were interpreted as follows: \$100; \$25, and \$20. This is different information than what is present on page 2 that reads as follows, in approximately the same location: \$200; \$50, and \$30. In addition, indented writing impressions interpreted as the initials "JD" and "#6854" appear to be different from the physical writing that reads "JD" in eight (8) different locations and "#6854" present on page 2.
	Video Spectral Comparator (VSC)	A control was run and work correctly before and after all examinations using the Video Spectral Comparator (VSC). The front and backsides of pages 1 through 3 were examined. Differences were noted in the fluorescent properties of the black inks used to fill in three pages of the document. Page 2 reacted differently than pages 1 and 3. Pages 1 and 3 reacted similarly using all light waves and filter combinations however, chemical testing would be needed to determine if the inks were similar. Examinations of the paper revealed a slight difference in the watermark in page 2, but there is no conclusion if this was indeed a true difference.
	Microscopic Examination	Examinations conducted using a stereo-microscope revealed pages 1 and 3 were produced in black ball point ink. As stated previously, chemical testing would be needed to determine if the inks were similar. Microscopic examinations of the black ink on page 2 revealed it was non-ball point ink. There were some fine striations present however the ink appeared to be more absorbed into the paper than the ball point ink on pages 1 and 3.
	Visual Examination	Visual examinations of the questioned document revealed what appeared to be only one set of staple holes, on each of the three pages, from the staple that had been removed by this scientist. In addition, pages 1 and 3 bore the imprint of a paper clip and page 2 did not have the paper clip impression.

TABLE 2

WebCode	Methods/Techniques	Observations
W9CBE2	Visual Examination	Visual Examination technique, alteration found.
	Macroscopic Examination	Macroscopic Examination source technique, alteration found.
	Microscopic Examination	Microscopic Examination technique, alteration found.
	Ultraviolet Light	Examination of the document being studied using ultraviolet light; alteration found using 715 nanometers between page one and two, page two and three too. and the same reaction between page one and three.
	Infrared Light	Examination of document being studied using infrared light source, alteration was found.
	Video Spectral Comparator (VSC)	Examination of document being studied using vsc 8000; alteration found. and using Incandescent light source technique, alteration found too.
WBWNQZ	Macroscopic Examination	The second sheet has greater whiteness than sheets 1 and 3 (juxtaposition).
	Microscopic Examination	The pattern of the footprint of the writer element of sheet 2 differs from the pattern of sheets 1 and 3 (use of at least 2 kinds of black ink different from each other).
	Video Spectral Comparator (VSC)	The ink of the writings of the second sheet presents a spectral difference compared to that of the writings and signatures of the sheets 1 and 3 (verification of the existence of at least two kinds of black ink different from each other).
WNELMN	Video Spectral Comparator (VSC)	With the use of the spectral comparator, under the influence of infrared light, it is established that folios 1 and 3 the absorption process of the ink used in the scriptural full occurs at 665 nanometers. Then the same procedure is applied for folio two (2), where the ink used for the scriptural full remains within the spectrum of 925 nanometers, which indicates the use of another type of ink.
	Magnification	Preliminarily we used magnifying glasses, with the purpose of observing some type of alteration by erasure, abrading or scraping, but no traces were found on the substrate in its three folios.
	Visual Examination	In the same way, the document was observed directly under natural light, and no evidence of alteration was found
WPDLV2	ESDA	Using the ESDA, not only the entries of page 3 become visible on page 3 but also additional entries. Some of these additional entries match with the entries of page 1 but there are others which do not match with any entries of the contract. None of the entries of the page 2 of the questioned contract are visible on the esda foils of page 3. In the questioned areas of page 2 (pet deposit, rent and parking fee) different entries become visible. The entries on the esda foils in comparison to the questioned contract of the agent Samantha Haan are different; eg. pets: 100 \$ instead of 200 \$ deposit, 25 \$ instead of 50 \$ monthly rent; parking: 20 \$ instead of 30 \$ for the monthly fee.
	Visual Examination	The contract was closed with a metallic staple on the left upper corner. There are no indications of falsification visible. On page 1 and 3 there are imprints of a paperclip which was obviously fixed there about 3 cm way from the upper left corner. There is no imprint of this paperclip on page 2 of the questioned contract.

TABLE 2

WebCode	Methods/Techniques	Observations
	Infrared Light	The contract was filled out with different writing inks. The entries on pages 1 and 3 agree in fluorescence. The entries of page 2 differ in infrared fluorescence to the entries of the other two pages. The entries of page 2 (pet deposit and rent, and parking fees ) are written with different writing inks than the entries on pages 1 and 3.
WWL8JN	Video Spectral Comparator (VSC) Stereoscopic microscope	
X69YV7	ESDA  Video Spectral Comparator (VSC)  Video Spectral Comparator (VSC)	Vacuum box. Revelation of tracks of pressing: The latent traces of treading are positive, the traces revealed on the front and back of page 3 do not correspond to the amounts on page 2. The traces left by the printer are identical on all 3 pages.  Review of printing techniques: VSC 6000: observation of monochrome toner grains under high magnification. reaction to the magnetic ink detector.  Ink differentiation test: Under UV 254,312 and 365: negative results. Under transmitted UV: negative results. Infrared and fluorescence with shutdown filters at 695 and 1000: the results on pages 1 and 3 are identical. But they are different for page 2. Under transmitted light: negative results. Under grazing light: negative results. Detection of magnetic inks: no difference in toner
X9TLUK	Oblique Light  ESDA  Microscopic Examination  Video Spectral Comparator (VSC)	Binding markings on page 1 and 3, but not on page 2  Indented writing on page 3 that corresponded to the form of page 2, but was from a separate page  Entire document is toner printing process  Optical differences in ink between page 2 and remaining pages
X9WYLN	Visual Examination  ESDA  Oblique Light  Video Spectral Comparator (VSC)  Overlays  Microscopic Examination  Handwriting Examination  magnetic ink	All pages are printed in black toner. The handwriting is in black ball pen. At least two pens were used.  Indented writing on p. 3 that doesn't appear on p. 1 and is different from p. 2. There is no indented writing on p. 2 and the paper clip mark doesn't appear. Paper clip mark on p. 1 & p. 3 doesn't appear on p. 2.  Indented writing on p. 3 that doesn't appear on p. 1 and is different from p. 2. There is no indented writing on p. 2 and the paper clip mark doesn't appear. Paper clip mark on p. 1 & p. 3 doesn't appear on p. 2.  Pen ink on p. 2 reacts differently when illuminated at 400-535nm and viewed with IR spot.  Indented writing on p. 3 that doesn't appear on p. 1 and is different from p. 2.  All pages are printed in black toner. The handwriting is in black ball pen. At least two pens were used.  The "JD" signatuers on p. 2 are slightly different from those on p. 1 & p. 3.  all printing is in magnetic toner.

TABLE 2

WebCode	Methods/Techniques	Observations
XX3UTW	Macroscopic/Microscopic Examination	A darker and brighter shade is distinguished, besides, striae intragramatico in the strokes of the texts that are part of the full of the sheets No. 1 and No. 3. The previous qualities are not appreciable in the manuscripts texts of the sheet No. 2.
	Video Spectral Comparator (VSC)	The texts made in sheets 1 and 3 all disappear. The texts made in sheets 2 prevail steadily. It is verified that the composition of the ink in the texts of sheet 2 it is not the same as in the texts of sheet 1 and 3.
	Ultraviolet Light	A darker blue tonality is distinguished in the sheet No. 1 and No. 3 and a lighter blue shade in the sheet No. 2.
XZFREJ	Visual Examination	Performed visual analysis of item for printing, writing characteristics.
	Oblique Light	Analysis item for indented writing and other features.
	ESDA	Employed the ESDA machine to raise indented writing. Helped determine the disagreement between the patent writing compared to the indented writing.
	Video Spectral Comparator (VSC)	Employed to reveal differences in visible inked entries.
	Overlays	Used to compare the patent writing and indented entries.
YATTBM	Video Spectral Comparator (VSC)	When performing the analysis applying the automatic sequencing of filters with the lights, incident white, infra-red, ultra violet, fluorescence point of the VSC 8000 Video Spectral Comparison, it is observed that the filling ink with handwriting of sheets 1 and 3, they react in the same way, fading between 665 nm and 695 nm. When performing the analysis by applying the automatic sequencing of filters with the lights, incident white, infra-red, ultra violet, fluorescence point of the VSC 8000 Video Spectral Comparison, it is observed that the filling ink with handwriting of the sheet 2 reacts differently than the fill ink with handwriting of which sheets 1 and 3, which does not fade.
	Transmitted Light	When performing the analysis applying Light transmitted to the questioned document, no thinning of the paper fibers is observed. When performing the analysis by applying Oblique Light, there is no paper fiber removal or physical erasure.
	Handwriting Examination	When performing the examination with the Leica EZ4D stereoscope microscope, between the handwriting that are read: "JD" of the filling of sheet 1, with the handwriting that are read: "JD" of the filling of sheet 3, of the questioned agreement. It is observed that they present identifying characteristics, such as: 1. Letter "J", lower area, narrow curve; end point on hook. 2. Letter "D", vertical line with an inclination to the left; starting point of right stroke, on hook. When performing the examination with the Leica EZ4D Stereoscope microscope, between the handwriting that are read: "JD" of the filling of sheet 2, with the handwriting that are read: "JD" of the filling of the sheets 1 and 3, of the questioned agreement. It is observed that they present contradictory characteristics, such as: 1. Letter "J", lower area, wide curve; abrupt end point, elaborated in a while. 2. Letter "D", vertical stroke, straight; starting point of right stroke, in abrupt.
YDHHUV	Visual Examination	
	Microscopic Examination	Ink shade difference. Writing tool comparison.
	Video Spectral Comparator (VSC)	Different reaction of inks

TABLE 2

WebCode	Methods/Techniques	Observations
	ESDA	Grooves corresponding to writing and graphic elements have been found
YKKJH6	Microscopic Examination	The Leica Stereoscope was used to determine the printing processes for the document and data entries. It was determined that the document was toner printed with ink pen data entries. Side light was used and roller marks were noted on the reverse of each page. Instrumentation did not allow for decent imagery. The roller marks on all three pages appear to be similar.
	ESDA	The Electrostatic Detection Apparatus was used to examine the pages of the document for indentations. Impressions were found on the front of page 3 that match ink pen data entries on page 1. No noticeable impressions found on the current page 2 which reveal that it was not under page 1 when the page 1 entries were written on the document. Indentations found on the reverse of page 3 do not match any of the entries from page 1 or 2; although it could not be conclusively determined if these indentations were from the original page 2; indentations with the number "100", "25" and "20" as well as several "JD" initials are in the general areas where the original page 2 would have transferred the entries for the pet deposit and rent and parking fee and "JD" initials (with the current page 2 entries showing "200", "50" and "30"). It should be noted that the "JD" initials do not appear to match the formation of the JD initials on current page 2.
	Video Spectral Comparator (VSC)	The Video Spectral Comparator (UV, IR, Oblique, Flood, and Transmitted lighting) was used to examine the document using different light sources and magnification. Under ultraviolet light, examination showed that all pages have a similar reaction. Transmitted light indicated that there were no watermarks or evidence of alteration. Infrared light also indicated that there was no evidence of alteration to any of the pages; however, it did show that different a different pen was used for the entries on the current page 2 when compared to pages 1 and 3. The differences in the infrared reaction confirmed this detail. Oblique light was used to determine if there was any additional indentations or tactile features of the pages. It was noted that what appears to be paper clip impressions were visible using side light on pages 1 and 3 but were absent from the current page 2, indicating that it was not originally part of the paper clipped document.
YLE7XE	Visual Examination	Visual examinations revealed a three sheet document set, with margins in agreement, numbering sequential, a single staple, embossing from a paper clip on pages one and three, and apparent ink and handwriting anomalies between pages one and two, and two and three.
	Microscopic Examination	Toner on white paper agreement, including artificial watermark. Two ballpoint ink pens used on pages one and three, and different ballpoint ink pen on page two. Removed staple. No additional staple holes.
	Oblique Light	Page two has no embossing from a paper clip. Backs of pages one and three show pronounced embossing from handwriting, whereas page two shows minor embossing.
	Video Spectral Comparator (VSC)	The two inks used on pages one and three are difficult to separate with VSC. Those two inks are different from the ink used on page two.

TABLE 2

WebCode	Methods/Techniques	Observations
	ESDA	All three pages were written on while in contact with a porous substrate. It is typical that paper is the porous substrate. Impressions from page one do not appear on page two, but do appear faintly on page three. Impressions from a different page two show up on the face of page three. The dollar amounts have been changed from 100, 25 and 20 to 200, 50 and 30. Regarding the claims of alterations to overall rent and utilities, faint dollar amounts of 1200 and 40 were found in the visualized impressions on page three, and correspond to those dollar amounts found on page one. It is noted that other dollar amounts from page one were found in the visualized impressions on the face of page three.
	Handwriting Examination	The JD initials on pages one and three are consistent as those of one writer. The writings of "JD" on page two are significantly different from the writer of the "JD" initials on pages one and three.
YZVDMY	Microscopic Examination	Examination under the regular and obliqued lights.
	Video Spectral Comparator (VSC)	examination under the regular, obliqued, ultraviolet, infrared luminescence and reflect lights.
Z6GQ2R	Microscopic Examination	The three sheets are printed using laser printing techniques.
	Video Spectral Comparator (VSC)	The handwriting of the second sheet presents an ink that reacts differently to that of the first and last leaves.
Z89MPL	ESDA	When analyzed in the ESDA LITE team, the third sheet reveals grooves with different information to sheet two, these being the numerals in the first free space the number one hundred and in the second the number twenty-five. In sheet two of the questioned contract shows in the first free space with pen the number two hundred and in the second space the number fifty.
	Oblique Light	The leaves one and three contain a mark of a clip which leaf two lacks
	Infrared Light	The ink of sheet one and three when subjected to infrared light have the same behavior or tonality, while sheet two differs from the same shade as pages one and three.
	Analisis de alteración en documentos	The present analysis was carried out using the previous techniques.
ZBQXPC	Video Spectral Comparator (VSC)	1.On both page one and page three of the lease agreement, there is an indentation of paper clip on the upper left corner. Whereas it shows no indentation of paper clip at the same place on page two. 2.The luminescence of handwriting on both page one and page three of the lease agreement is different from the luminescence of handwriting on page two.
	ESDA	1.The indentation of page three doesn't correspond with the figures of pet deposit and rent, and parking fee shown on page two. 2.The indentation of page three corresponds with the figure of utilities fee shown on page one.
ZLPH6H	Transmitted Light	Checked for presence of watermark. None visualized.
	Microscopic Examination	Observed printing processes (toner) and black ballpoint writing.
	Oblique Light	Observed indented writing, paper lines, and paper clip indentations.
	ESDA	Observed and lifted indented writing.
	Overlays	Used ESDA lift to overlay indented writing on original writing for comparison.

TABLE 2

WebCode	Methods/Techniques	Observations
	Video Spectral Comparator (VSC)	Used for ultraviolet and infrared light exams to view ink and paper reactions.
ZQK9BU	Visual Examination	The analysis of each of the sheets that make up the questioned document was made, making a revision of both its front and back, observing tonality of ink with some degree of difference between sheets 1 and 3 with respect to sheet 2.
	Macroscopic Examination	The visual examination is confirmed.
	Microscopic Examination	The visual examination is confirmed.
	Video Spectral Comparator (VSC)	The analysis was conducted by directing infrared light to each of the sheets that make up the questioned document, confirming that the full ones that work in the spaces designated for this purpose of worksheets 1 and 3 are different with respect to the last inscriber of the sheet 2.
ZRFWR4	Visual Examination	All three sheets of paper are similar, stapled. There are traces of paper clamp on sheets 1 and 3 and no trace on sheet 2. Handwriting imprint on the back side of the sheets looks stronger on sheets 1 and 3 than 2.
	Microscopic Examination	Print: black toner on all 3 sheets, visually similar. Handwriting: black pen on all 3 sheets, visually similar.
	Video Spectral Comparator (VSC)	Oblique light: traces of paper clamp on sheets 1 and 3, not visible on sheet 2. IR luminescence: different pen (black ink) on sheet 2 than 1 and 3. UV: paper of sheet 2 fluoresces lighter than 1 and 3.
	ESDA	Indented impressions of handwriting on sheet 1 are visible on sheet 3 but not on sheet 2. Indented impressions of handwriting, similar as on sheet 2, is visible on sheet 3 but it differs in shape of letters and by content (for pets 200 and 50 instead of 100 and 25, for parking 30 instead of 20). Impressions of printers transport mechanism looks similar on all 3 sheets (hardly visible).
	magnetic properties visualisation	Toner on all 3 sheets shows magnetic properties.

## Response Summary

Participants: 170

### Methods Utilized

ESDA	110	Magnification	11	Thickness	4
Handwriting Examination	39	Micrometer	2	Transmitted Light	18
Indented Writing	22	Microscopic Exam	64	UV Light	33
Infrared Light	30	Oblique Light	55	Visual Exam	81
Macroscopic Exam	10	Overlays	18	VSC	137
Macroscopic/Microscopic Exam	29	Ruler	5		

**\*\*Note:** 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
2MALFC	The tenancy agreement presents alteration, by the method of substitution in the second sheet of the contract.
2MFZKP	<p>The cumulative observations and assessments, provided conclusive evidence to support my Opinion that Page 2 is not the original page 2 originally created with pages 1 and 3. Observations and assessments included the following: 1. Pages 1-3 are printed with a dry-toner process. The background watermark on each page is also printed by a dry-toner process. All HW entries were made with a black ballpoint pen, as confirmed by indentations observed in the ink writing lines and indentations observed with side-lighting on the back of each page. 2. Examination by side-lighting shows a paperclip indentation at top left in paper for pages 1 and 3; no similar indentation is visible on page 2. 3. The Resident's signature and initials on pages 1 and 3 were made with a black ink that is visually darker than the black ink entries attributable to the Owner/Agent on those pages. No differences in inks were detected by non-destructive visual examinations between the handwritten entries by the Resident and Owner/Agent on page 2. 4. RGB scans were made of pages 1-3 at 660 spi. Digital files for pages 1-3 were processed by conversion to Lab Color Mode (LCM). LCM_b shows Page 2 handwritten black ink entries are in a darker/different ink than the entries on pages 1 and 3. 5. Inks on page 2 were shown to be different from the inks on pages 1 and 3, based on their response when examined with a Foster &amp; Freeman VSC device. Using spot filter IRL @480nm with camera filter 645nm settings, handwriting inks on pages 1 and 3 reflected light (were light in appearance), while inks on page 2 examined at the same IRL settings, absorbed the light (were dark). 5. Examination by ESDA revealed: 6. Indentation examination with a Foster &amp; Freeman ESDA revealed the following: (A) No indentations were observed on Page 2 that corresponded to visible ink entries on Pages 1 &amp; 3. (B) Page 3 has indentations corresponding to some of the handwritten entries visible on Page 1. The indentations on page 3 which correspond in position to visible entries on Page 2, show differences in letterforms and some content. Page 3 indentations show a "100" instead of the corresponding visible ink entry "200" on the second line of page 2; also, indentations on page 3 show "35" instead of the corresponding "50" ink entry on page. Additional indentations were developed on page 3 that were fragmentary and insufficient for interpretation. 7. "JD" initials on page 2: appear to have a partial retrace on the left side of the "J" horizontal cap stroke. There is no corresponding retrace among the "JD" initials on pages 1 and 3. Further, the "J" letterforms have a terminal tic/drag to the right on "JD" initials on pages 1 and 3; this feature is absent in the "J" letterforms on page 2. These differences support a limited indication finding that the writer of the "JD" initials on pages 1 and 3 may not have written the "JD" initials on page 2. The limited features in these initials entries was the primary limitation in this comparison examination of the initials entries on each page.</p>
2N9MNN	<p>It was requested that Item Q1(1-3) be examined to determine if there are any signs of alteration following its completion. Examination of Item Q1(1-3) disclosed that the document has been altered by substitution of the current second page of the document for a previous second page. This opinion is based on the following findings: (a.) Non-destructive examination methods disclosed that the handwritten ballpoint pen entries of pages 1 and 3 of Item Q1(1-3) were written with a similar ink; however, the handwritten ballpoint pen entries on page 2 were written with a different ink. It should be noted that while non-destructive methods can often determine differences between inks, they cannot determine that two ink samples are the same ink. In this case, no differences were found between the writing ink on pages 1 and 3, but they cannot be determined to be the same ink. (b.) Item Q1(1-3) was examined for the presence of indented writing indentations. Indented handwriting impressions were not found on the first and second page; however, they were found on page 3. The indentations on page 3 were caused, in part, by the handwritten entries appearing on page 1. The handwriting on the current page 2 did not cause any of the indentations on page 3. The remaining handwriting indentations on page 3 were caused by handwriting from another document(s), which is not currently part of Item Q1(1-3). The positioning of the indentations caused by this latter document are consistent with someone writing in the blank entries lines of another version of page 2; however, there are differences between the information on the current page 2 and other version of page 2. (1) The indentation of the number "100" was developed on page 3. The location on the page of this indentation is consistent with the position of the number "200" on the current page 2. (2) The indentation of the number "25" was developed on page</p>

## TABLE 3

WebCode	Conclusions
	<p>3. The location on the page of this indentation is consistent with the position of the number "50" on the current page 2. (3) The indentation of the number "20" was developed on page 3. The location on the page of this indentation is consistent with the position of the number "30" on the current page 2. (4) The indentation of the entry "#6854" was developed on page 3. The location on the page of this indentation is consistent with the position of the number "#6854" on the current page 2; however, the developed indentation was not caused by the inked "#6854" entry on page 2. (5) The indentations of eight "JP" entries were developed on page 3. The locations on the page of these indentations are consistent with the position of the inked "JP" entries on the current page 2; however, the inked entries on page 2 did not cause any of the "JP" indentations. The "JP" indentations were written in a similar form to the "JP" initials appearing on page 1 and 3 of Item Q1(1-3) as opposed to the form of the "JP" initials appearing on page 2. (c.) In the absence of known writing samples, handwriting comparisons were made by comparing the "JP" initials on pages 1 and 3 to the "JP" initials on page 2. Significant similarities were found between the initials appearing on page 1 and 3; however, significant differences were found between the "JP" initials appearing on page 2 and the "JP" initials appearing on pages 1 and 3. This examination resulted in the opinion that the "JP" initials on 1 and 3 were probably written by the same person; however, the "JP" initials on page 2 were probably written by a different person. A limitation during this examination was the small amount of writing in the initials. (d.) Item Q1(1-3) was stapled together at the time it was submitted; however, a paper clip impression was found on page 1 and another was found on page 3. There was no paper clip impression on page 2. A paper clip was not included with the submitted document. Had all three sheets of paper been previously bound together by a paper clip, the undersigned would expect to find a paper clip impression on page 2 as well. (e.) The paper used for Item Q1(1-3) is visually similar in all respects, except that page 2 has a different ultraviolet fluorescence. While this difference, combined with other findings, supports the opinion of page substitution, it is also possible for paper in the same ream to vary in ultraviolet fluorescence. Additionally, exposure to strong light can alter the ultraviolet characteristics of a piece of paper. No other differences were found in the characteristics of the paper. The printed text on Item Q1(1-3) was printed by a machine using electrostatic toner (e.g., a laser printer). The toner morphology was examined non-destructively using a stereo-binocular microscope. No difference in toner morphology was found between the three pages. This finding does not necessarily mean that the same machine was used to print all three pages. The product of different machines of the same model would be similar in terms of toner morphology. Additionally, many other makes and models could possibly produce similar results. Item Q1(1-3) was submitted stapled together by a single staple. There was no evidence that the staple had been previously removed and reattached to the document. There were no staple holes on the pages from previous stapling. The staple was removed to facilitate examination. The staple was retained with Item Q1(1-3) upon completion of the examinations. If known writing samples (initials) of Mr. James Dunn are submitted for examination, more definitive opinions regarding the handwriting may be possible.</p>
2TLYTT	<p>Based on the analysis made to the questioned document and the assessment of the characteristics found there in the document, does show evidence of tampering by removal and addition on sheet #2 of the contract taking into account the following findings: 1. The second sheet of the contract has a number of differences when seen under infrared lighting, compared to the other two sheets of the document (sheets #1 and #3), which show that it was written at a different time and with a different writing device. 2. The markings of paper holders appear only on sheets #1 and #3. 3. During the reveal of impressions on sheet #3, it is evident that the impressions are different from the amounts written down on sections 7 and 8 of sheet #2. 4. Section 5 of sheet #1 of the contract did not appear to be tampered with. The questioned document LEASING CONTRACT of Pinecrest Village Condominiums HAS BEEN TAMPERED.</p>
3DQU3B	<p>In the questioned document (Item Q1: Three page lease agreement for Pinecrest Village Apartments) there are signs of alteration.</p>
3DUAL4	<p>Exhibits Q1(1)(a and b), Q1(2)(a and b), and Q1(3)(a and b) were examined visually, microscopically and with alternate light sources. The machine-generated entries on Exhibits Q1(1)a, Q1(2)a, and Q1(3)a were produced using black toner printing technology. The questioned handwritten entries on Exhibits Q1(1)a, Q1(2)a, and Q1(3)a were produced with black ballpoint ink. No font differences were observed between Exhibits Q1(1)a, Q1(2)a, and Q1(3)a. Ink differences between the questioned handwritten entries on Exhibit Q1(2)a and the questioned handwritten entries on Exhibits Q1(1)a and</p>

TABLE 3

WebCode	Conclusions
	<p>Q1(3)a were observed. Differences in the paper were also observed between Exhibit Q1(2)(a and b) and Exhibits Q1(1)(a and b) and Q1(3)(a and b). Please see the attached images for details. Exhibits Q1(1)(a and b), Q1(2)(a and b), and Q1(3)(a and b) were examined for the presence of indented handwriting and/or machine-created impressions using the Electrostatic Detection Apparatus (ESDA). Handwriting indentations were observed on Exhibits Q1(1)b, Q1(2)b, and Q1(3)(a and b). No handwriting indentations were observed on Exhibits Q1(1)a and Q1(2)a. Please see the attached images for details. Using a digital overlay technique, the handwriting indentations observed on Exhibits Q1(1)b were sourced to the handwriting on Exhibit Q1(1)a. The handwriting indentations observed on Exhibit Q1(2)b were sourced to the handwriting on Exhibit Q1(2)a. Sourced and unsourced handwriting indentations were observed on Exhibits Q1(3)(a and b). The sourced handwriting indentations observed on Exhibit Q1(3)a were from the handwriting on Exhibit Q1(1)a. The sourced handwriting indentations observed on Exhibit Q1(3)b were from the handwriting on Exhibit Q1(1)a and Q1(3)a. The unsourced handwriting indentations were of handwriting entries that differ from the handwriting present on Exhibit Q1(2)a. This evidence suggests that an original page has been removed and/or replaced with Exhibit Q1(2)(a and b). Please see the attached images for details. Additionally, machine-created impressions were observed on Exhibits Q1(1)(a and b), Q1(2)(a and b), and Q1(3)(a and b). The ESDA lifts created from Exhibits Q1(1)(a and b), Q1(2)(a and b), and Q1(3)(a and b) were compared. These machine-generated impressions were of a similar pattern and design. However, additional machine-created impressions were observed on Exhibit Q1(2)(a). Therefore, Exhibits Q1(1)(a and b) and Q1(3)(a and b) probably originated from a common source ; however due to an insufficient amount of identifying characteristics and/or printing defects, the evidence falls short of that necessary to support a conclusive opinion. Exhibit Q1(2)(a and b) could neither be identified, nor eliminated as originating from the same common source as Exhibits Q1(1)(a and b) and Q1(3)(a and b) due to the presence of additional machine-created impressions and an insufficient amount of identifying characteristics and/or printing defects. Furthermore, a paperclip-like impression was observed on Exhibits Q1(1)(a and b) and Q1(3)(a and b). No paperclip-like impressions were observed on Exhibit Q1(2)(a and b). Please see the attached images for details. The handwriting on Exhibits Q1(1)a, Q1(2)a, and Q1(3)a was examined visually. The handwriting appears to be naturally written and may contain a sufficient amount of characteristics to be compared with submitted known writing. Exhibits Q1(1)(a and b), Q1(2)(a and b), Q1(3)(a and b), and the original ESDA indentation lifts were digitally scanned. [Attachment not provided by participant]</p>
3JY9U9	<p>Several observations provide conclusive evidence that there was a page substitution of page 2 in the questioned agreement. These observations are: The paper clip indentation presence on page 1 and 3 and its absence on page 2; as well as the construction difference in the handwriting between page 1 and 3 and page 2; also the ink optical and physical differences between page 2 and page 1 and 3; finally the indentation development of page 3, that reveal indentation from page 1 and indentation in similar position to page 2, but with different entries.</p>
3YRRMP	<p>Visual and microscopic examinations were conducted on the questioned lease agreement (Exhibit Q1). Differences were noted between the ink and pen used to create the "JD" initials on page 2 (seven sets of initials) when compared against those on pages 1 and 3. Further chemical analysis of the entries should be conducted in order to confirm this observation.</p>
43WLJF	<p>Based on the finding examination, It's confirmed that the questioned agreement was altered by page 2 substitution.</p>
4MPPXL	<p>Examination of the Q1 document did not yield any characteristics of alteration, obliteration, addition, or manipulation of the information contained in the agreement. The Q1 document has not been altered.</p>
4N62N4	<p>The questioned Rental Agreement has been altered by the substitution of page 2 of the document. Page 3 of the Agreement contains unsourced indentations showing that a different page 2 was previously completed above it. While this missing page referred to the same parking space (#6854), the amounts corresponding to additional Pet deposit, Pet rental and monthly parking fee were for \$100, \$25 and \$20 respectively.</p>
4N69HJ	<p>Based on the impressions found on page 3 and the ink responding differently on page 2, there is evidence that this is probably an altered document. The level of probability was chosen in part because</p>

TABLE 3

WebCode	Conclusions
	Mr. Dunn's copy of this agreement was not submitted for comparison.
4NJNX6	Conducted examinations allowed to conclude that the second page of questioned document had been replaced.
4PYW2E	Alterations were detected on Item 1 (Item Q1) (via a page substitution of page 2) using non-destructive methods including optical differentiation, indented writing, and other physical characteristics. Indented writing was observed on page 3 of Item 1 (Item Q1) which does not correspond to entries on the remaining pages of Item 1 (Item Q1). Images of the Electrostatic Detection Apparatus (ESDA) lifts, used to visualize and retain the indented writing (and designated Item 2), are being retained. Pages 1 and 2 did not bear any indented writing from their preceding and/or following pages. No other indented writing of value was observed using side-lighting and/or the ESDA.
4V4NEH	After completing an examination of the submitted questioned exhibits, this examiner opines that the Q-1 exhibit was altered. ESDA impressions showing an original number "100" and "20" were observed at the top of the Q-1(3)exhibit. Further the Q-1(2) page is the non-consistent page and is the middle page of the three.
4VNG6U	The technical findings support the proposal that the rental contract has been modified with a second non-original sheet.
6CKRYY	The agreement of lease questioned Q1, is altered by addition of the second page of the document. At intervals of wavelength between 665 nm and 925 nm, it can be seen that hand writings of the second sheet, remain constant during the sweep photo spectrometric, while the manual writings of the first and third sheets, at wavelength intervals between 665 nm and 695 nm they disappear from present items. With 365 nm UV light, is corroborated variations on the surface of the paper.
6EV46T	The inks of the handwriting on page # 2 (items 7 al 14) of the lease agreement,present differences in the spectrum, in relation to the pages #1 and 3, of the agreement.
72J7MA	In my opinion, the Rental Agreement was altered after its completion, namely: the second page was replaced.
77EZLW	The paper color of page 2 under UV fluorescence condition differs from page 1 and 3. And the ink color of page 2 handwriting does, too. The renter state his signature on page 3 appears to be genuine. So, I made the conclusion that page 1 and 3 is genuine and the page 2 was altered.
7EQ7AM	[No Conclusions Reported.]
7HMR2Q	Page number 2 of the contract was replaced, so the document in question is altered.
7KMKCY	As a result of examination and comparison based solely on the material submitted, the following conclusions and observations are opinions based upon my experience, education and training and are as follows: 1. The questioned rental agreement contains an alteration as page two has been removed and substituted. a. Indented paper clip impressions directly to the right of the staple were observed on the front and reverse of page one and an indented paper clip impression was observed approximately one inch from the left margin on the front and reverse of page three. Page two did not contain any indented paper clip impressions. b. The black ball point pen ink on pages one and three react by luminescing and are consistent when examined with infra-red reflectance and luminescence. The black ball point pen ink on page two reacts by absorbance/appearing dark and is inconsistent with pages one and three. i. The inks on page one reacted consistently in the contested area for payments and utilities and throughout the remainder of the document. ii. The inks on page two reacted consistently in the contested area for pets and parking and throughout the remainder of the document, however, reacted inconsistently when compared to page one and page three. iii. Exhibits Q1A-C all were created via an electrophotographic process. 1. The toner watermark on page one and three reacted consistently, however, the watermark on page two appeared slightly darker than the watermarks on page one and three. a. Ultra violet examinations and observations of the paper show that page one and three appear

TABLE 3

WebCode	Conclusions
	somewhat darker purple in color than page two. 2. There are indications to suggest that the initials on page two were not written by the same person that created the initials on pages one and three, however, the evidence falls short of that necessary to support a definite conclusion. 3. No conclusion can be rendered on the numbers on pages one, two and three. 4. The font contained on pages one through three is of the Times New Roman family and the body of the text is 12 point. The header on page one is 18 point and 14 point respectively. 5. Exhibit Q1 was scanned for preservation by Specialist XXX. 6. An ESDA (ElectroStatic Detection Apparatus) examination for the detection and reading of indented writing, typing or other identifying impressions was NOT performed on the questioned rental agreement as the pages were stapled together. Negative for indented writing with oblique lighting.
7UG738	THE DOCUMENT IF PRESENTING ALTERATION. WHY IF PRESENTING OWN CHARACTERISTICS OF THE ALTERATION
7XFKNC	Results of Examinations: Alterations were detected on Item 1 (Item Q1). Non-destructive optical examinations were conducted on Item 1 (Item Q1), pages 1 through 3 utilizing the Video Spectral Comparator 8000. Writing on Item 1 (Item Q1) page 2 is optically different than writing on Item 1 (Item Q1) pages 1 and 3. Additionally, indented writing was observed on Item 1 (Item Q1) page 3 utilizing the Electrostatic Detection Apparatus and sidelighting. The Item 1 (Item Q1) page 2 numerical dollar amounts of "200" (paragraph 7), "50" (paragraph 7), "30" (paragraph 8), eight sets of "JD" initials and the "#6854" entry do not correspond with indented writing in the same format observed on Item 1 (Item Q1) page 3. The indented numerical dollar amounts observed on Item 1 (Item Q1) page 3 are "100", "25" and "20", respectively. One ESDA lift of Item 1 (Item Q1) page 3, used to capture and retain the indented writing, has been designated Item 2 and is considered secondary evidence. No indented writing of value was observed on Item 1 (Item Q1) pages 1 and 2. A binding device mark was observed on Item 1 (Item Q1) page 1 and 3. This mark was not observed on Item 1 (Item Q1) page 2. No watermarks were observed on Item 1 (Item Q1) pages 1 through 3.
83QW4P	[No Conclusions Reported.]
8Q3L3D	It is highly probable the questioned lease was altered after it was signed. In particular, there is strong evidence that the second page submitted was substituted for the original second page. The following observations were made which support this conclusion: Examination using the Electrostatic Detection Apparatus (ESDA) revealed handwriting impressions on the third page originating from a document with the same format (as far as spacing for handwritten entries) as the submitted second page but that are not from that page. The impressions are what I would expect to find if a different second page had been completed while placed on top of page three. The impressions found appear to read "100," "25," "JD," "6854," "20," "JD," followed by six more "JD" initials. All of these impressions overlay where the handwriting would be filled out on page two if the machine-printing of the substituted document is the same as the one submitted. In that case, the pet deposit, additional monthly rent for the pet, and parking fee would all be different than what appears on the submitted second page. It is important to note that I cannot rule out the possibility that the page that was substituted had different machine-printed text but with the same spacing for handwriting as the submitted second page. Also, the above decipherment uses context clues and may be open to other interpretations. Writing impressions from the first page of the agreement were also found on the third page, but impressions from the submitted second page were not. See the attached image below, for which the brightness, contrast, and tonal range have been adjusted to facilitate decipherment. Impressions that may be attributable to a paperclip can be seen on pages one and three but not page two. The possibility of the first and third pages acting as a cushion to prevent impression on the second page of the questioned document cannot be entirely ruled out. Under UV excitation at 312 and 254 nanometers (nm), pages one and three fluoresce similarly, but page two fluoresces differently than pages one and three. The writing ink (or inks) on pages 1 and 3 react differently when viewed in the infrared portion of the spectrum than the ink on page 2. Specifically, the ink on pages 1 and 3 transmits the light (disappears) using a 695nm barrier filter, but the ink on page 2 continues to absorb (darken) at 1000nm. Note, the difference in ink reactions can be due to a difference in paper substrate, storage conditions, or other factors so does not necessarily indicate a different ink was used on page 2. The writing ink on all three pages was examined visually and microscopically for consistency in color, striations, and other writing instrument characteristics. Striations are fine, uninked

## TABLE 3

WebCode	Conclusions
	lines that are left by imperfections in the housing of a ball point pen. On pages one and three, the majority of the writing has a slightly different color and more striations apparent under magnification than the "JD" initials or Resident's Signature and date. On page two, there is no apparent difference between the color and amount of striations between any of the writing. Note, the possibility that the "JD" initials and Resident's Signature and date were written with a pen that looks darker and has less striations when written with a heavier pressure or under different circumstances cannot be entirely ruled out. No alteration of the first and third pages of the questioned document could be detected. [Attachment not provided by participant.]
8QUHRH	It was determined that Item 1, rental agreement, has been altered. This opinion is based on the notation of differences in non-destructive spectral reactions of the ink used on the "JD" initials and other entries on page 1.2 compared with the ink appearing on pages 1.1 and 1.3; the notation of indented impressions of different size and form of the "JD" initials and different form of the "6854" entry on page 1.3 when compared to the original inked "JD" initials and "6854" entry found on page 1.2; and paper clip indentations found only on pages 1.1 and 1.3. Differences in inked entries on page 1.2 and indented impressions on page 1.3 appear to be, respectively as follows: Pet deposit 200 100; Pet monthly rent 50 25; and Monthly parking 30 20. No indented impressions from the submitted page 1.2 were noted when examining page 1.3. Several of the inked entries from page 1.1 were noted in indented form on page 1.3. The locations (formatting) of the initials in indented form on page 1.3 were similar to the inked initials appearing on the submitted page 1.2. Non-destructive spectral similarities in the ink were noted between pages 1.1 and 1.3 when compared to page 1.2; however, it is not possible to say that the inks on these pages are identical using this method. The toner used in the machine prepared entries on pages 1.1, 1.2, and 1.3 appeared to be of the same morphology. This does not indicate, conclusively, that the same machine prepared all of three of the pages submitted. A single staple was used to hold all three pages together and no other additional holes in the staple area were noted on any of the pages. These notations in combination indicate that another page, different than the second page submitted, bearing different initials was, at some time, prepared on top of page 1.3 of the agreement. The writer of the hand printed initials on page 1.2 probably did not prepare the hand printed initials on pages 1.1 and 1.3. This opinion is based on some differences and few similarities between the writings on the submitted pages of the rental agreement. No known writings were submitted with this case. Should known writings from James Dunn become available, please submit for a comparative examination.
8YE3AE	The questioned documents Q1.1, Q1.2, and Q1.3, were viewed macroscopically, microscopically and with the aid of various light sources and filters. It has been determined that the three page lease agreement appears to have been altered following the completion. Copies of the images will be mailed to you under a separate cover for your review and interpretation. As is routine in some cases, we processed the questioned items 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 of Q1.3. Latent writing impressions were also developed on the back side of Q1.1 and Q1.2. Copies of the ESDA lifts will be mailed to you under a separate cover for your review and interpretation.
92GZNU	The questioned document of the Pinecrest Village Condominium Lease Agreement dated January 23, 2019; is altered by a page substitution; page 2 was substituted.
94DJKU	The page2 of the questioned agreement was changed.
97BUH8	Examination of the agreement Q1 revealed that the optical properties of the ink of the handwritten entries on pages 1 and 3 were different from those on page 2. This indicated that the handwritten entries on page 2, and those on pages 1 and 3 were written with different pens. Besides, examination of Q1 by ESDA revealed the presence of indented writings (corresponding to the handwritten entries on page 1) on page 3. In addition, extra indented writings, which were not corresponding to the handwriting on page 1 nor page 2, were also found on page 3. The amount entries for the pet deposit and rent, and parking fee written on page 2 were found to be higher than those of the indented writings recovered on

## TABLE 3

WebCode	Conclusions
	<p>page 3. The details of the amount entries for the pet deposit and rent, and parking fee written on page 2 and the indented writings for the corresponding entries recovered on page 3 were listed as below:            Handwritten entries on page 2: Pet Deposit and monthly rent: (200, 50), Monthly parking fee: (30).            Indented writings found on page 3: Pet Deposit and monthly rent: (100, 25), Monthly parking fee: (20).            In view of the above findings, I am of the opinion that the original page 2 of the questioned agreement Q1, which was written while the existing page 3 was placed under it, had been substituted with the existing one. In addition, no significant findings indicate that the amount entry "40" for the utilities on page 1 has been altered.</p>
9A7VBA	<p>It was determined that Item 1 (Item Q1) was altered. The three pages of Item 1 (Item Q1) were examined for indentations using the Foster &amp; Freeman Electrostatic Detection Apparatus. Electrostatic lifts were made from the front and back of the third page. Visual inspection of the lifts revealed that page two was an insertion, with the value of the pet deposit raised from \$100 to \$200, the additional monthly rent for the pet raised from \$25 to \$50, and the monthly parking amount raised from \$20 to \$30. Also, the initials and the space # on the submitted page two do not correspond with the indentations observed on the electrostatic lift from page three. These electrostatic lifts were designated as Item 2 and are considered secondary evidence. Also, examination of the handwriting inks on the three pages of Item 1 (Item Q1) using the Foster &amp; Freeman Videospectral Comparator display the handwriting ink that was used to prepare page two as being optically different than the handwriting ink used to prepare pages one and three. Additionally, binding marks from a paper clip were observed on Item 1 (Item Q1), pages one and three, but were not observed on Item 1 (Item Q1) page two.</p>
9AC6HV	<p>1. Q1 was altered, as the second page was replaced. 2. No alterations were detected in the first and third pages of Q1. 3. Given the location and type of indented writings found in page 3 of Q1, we conclude that: in item 7 "Pets", in page 2, where the amount "\$200" now appears, there used to be the amount of "100"; in item 8 "Parking", in page 2, where the amount "\$30" now appears, there used to be the amount of "20".</p>
9BT8DB	<p>Based on the findings examination, it is confirmed that the questioned lease agreement was altered by page 2 substitution.</p>
9MG9QP	<p>Based on the document provided for examination and the evidence contained therein, my professional opinion is the original Lease Agreement identified as Q is an altered document due to a Page 2 substitution, inserted as the original Lease Agreement's Page 2. Additionally the author of the JD initials on page 2 and the author of the JD initials on pages 1 &amp; 3 are not written by the same individual.</p>
AA6B88	<p>Based on the latent handwriting impressions of page 1 observed on page 3 and the similarities observed in the spectral properties of the ink between pages 1 and 3, I conclude that pages 1 and 3 of the Item Q1 were produced at the same time. Based on the differences observed in the spectral properties of the ink of pages 1 and 3, to the ink of page 2, and the latent handwriting impressions observed on page 3 (and absence of impressions of page 2 handwriting), I conclude that page 2 of the Item Q1 was produced at a different time from pages 1 and 3. Further based on the latent handwriting impressions observed on page 3 that are not from the handwriting observed on pages 1 or 2, I conclude that there was (at some point) another page on top of page 3 of Item Q1 when these entries were written. Based on these latent handwriting impressions observed on page 3 and the similar relative location to entries on page 2 I have concluded that the current page 2 of Item Q1 has been added/substituted (at some stage). Given the writing indentations developed on page 3 it is my opinion the original page 2 of Item Q1 detailed the pet deposit as '100' not '200', additional monthly rent as '25' not '50' and parking fee is '20' not '30'. Based on the examination observations there is no evidence that the utilities value of '40' on page 1 has been altered.</p>
AAFTRM	<p>It was determined that there are physical property differences between page 2 and pages 1,3 of the Rental Agreement, Q-1.</p>
AWWRAC	<p>Upon completion of an examination of the questioned exhibit submitted in this case, it is the opinion of this examiner that the Q-1 exhibit was altered by means of a page substitution of the second page of the exhibit.</p>

TABLE 3

WebCode	Conclusions
B2AR74	The questioned rental agreement (Exhibits 1 (pp1-3) was altered.
B9Q4K6	The questioned agreement was altered. Exhibit 1(2) was added to the rental agreement afterwards and was not part of the original agreement documents.
BAYJQB	The questioned agreement was altered.
BGJNF6	There are indications that the questioned agreement may have been altered. There appears to be evidence of page substitution, in this instance, page 2. The handwritten entries on page two were written in a different ink than the handwritten entries on pages one and three. The paperclip indentation which is consistent in location on pages one and three is absent on page two. The "JD" initials, while similar in style, appear to rise above the baseline on page two, whereas they rest on the baseline on page three. There is no evidence of ink deficiency on page one which would result in a change of pen to continue writing on page two. I do not find an explanation for the change of pen/ink for page two. The ink utilized for both the tenant signature and the landlord signature is consistent with the ink used to write page one and page two of the agreement, so it does not appear the two individuals were using two different pens to execute the agreement.
BJNDHD	In conclusion, after a thorough forensic examination whereby I applied the generally accepted standards and methodology, the evidence I observed, as listed in the previous section, are not useful as the basis of a reliable opinion of document alteration. Without a comparison document, the opinion is "C. CANNOT DETERMINE whether or not the questioned agreement was altered. "
BVR7WE	It has been concluded that page two of the Exhibit Q1 item is a substituted page with increased amounts for the pet deposit, the additional monthly rent for the pet and the monthly parking fee. The original amounts for these entries in the same order appear to be \$100, \$25 and \$20. It has been determined that the "JD" initials appearing on page two were probably executed by a different person than the person that prepared the same initials on pages one and three.
C3BVWF	Based on examination of the questioned Lease Agreement (Item #1, Three-page Lease Agreement for Pinecrest Village Apartments, dated 1/23/19), the following conclusion was made in determining alteration or non-alteration: The questioned Lease Agreement (Item #1) was altered.
CN2A99	Based on visual and instrumental examinations of Exhibit Q1 for alteration, it was determined Exhibit Q1 has been altered via the insertion of Exhibit Q1 (page 2) between Exhibit Q1 (page 1) and Exhibit Q1 (page 3). Additionally, there were unsourced indented impressions observed on Exhibit Q1 (page3), see images below. Note: Images are not to scale (Images not submitted to CTS).
CREA6Z	It was determined the lease agreement, Item 1 was altered.
CRUFH6	Alteration of the Item 1 (Item Q1) document was detected utilizing various lighting, filters, physical characteristics, and the Electrostatic Detection Apparatus (ESDA). It should be noted that optical differences were observed in the ink utilized on the entire second page when compared to the first and third pages. Indented writing was observed on Page 3 of Item 1 (Item Q1) utilizing the ESDA and side-lighting. The indented writing lifts are considered secondary evidence and have been designated Item 2. No other indented writing was observed on the submitted item. Additional observations and assessments have been made regarding the submitted item and recorded for possible future examinations.
CV72U8	With the use of the Microscope Regula MK 5001, Video Spectro Comparador 6000 HS and ESDA, arrived to the following conclusion: The page 2 of the questioned document was added or changed. The questioned Lease Contract is altered.
D2T2TK	According to the observations made on the documents submitted, the rental agreement in dispute has been altered and the original page 2 has been replaced by another page 2.

## TABLE 3

WebCode	Conclusions
DA8JFF	The questioned agreement was altered.
DGHEY	The document under analysis (three (03) pages of the contract of apprehension by Pinecrest Village Apartments) presents alterations in the whole of the second sheet, in the suppressive - additive modality.
DXR2TM	I have found that the ink used to complete page 2 differs to that used to complete pages 1 and 3. In addition, the paper of page 2 differs from that on pages 1 and 3 when viewed using an ultra-violet light source. ESDA examination of page 3 shows indentations of a different version of page 2 where some of the amount entries differ from the current page 2. taking all these entries together, then there is in my opinion conclusive evidence that the second page of the Rental Agreement has been replaced and some of the amounts increased.
DZJMEF	A STUDY AND EXAMINATION OF A THREE PAGE DOCUMENT COMMENCED ON APRIL 13, 2019. USING THE METHODS REFERENCED ON THE PRECEDING PAGE, THIS EXAMINER DETERMINED THAT PAGE TWO WAS SUBSTITUTED TO ALTER THE DOCUMENT IN QUESTION.
EEM3K4	It is determined that the Three Page Lease Agreement Document shows that page 2 had been substituted.
EKQ7DN	[No Conclusions Reported.]
EMCYYQ	The questioned agreement was altered by replacing the second page. The writings on the first page were not changed. There is no evidence that the third page was altered.
EZKTGV	The evidence provides very strong support for the proposition that the questioned document has been altered by page substitution of Page Two, over the proposition that the questioned document has not been altered.
F3Y7JD	Based on the following observations it has been concluded that item #Q1 has been altered via a complete page substitution of page 2. Pages 1 and 3 contain impressions on the top left corner (likely from a paper clip) that are not present on page 2. The handwritten entries on page 2 were created with a different ink than the handwritten entries on pages 1 and 3. The handwritten inks on pages 1 and 3 could not be differentiated using non-destructive testing techniques. All three pages of #Q1 were processed for indented writing. No indented writing was developed on pages 1 and 2. The handwritten entries on page 1 were developed as indented writing on page 3 along with several unsourced handwritten entries. The handwritten entries on page 2 were NOT developed as indented writing on page 3. The unsourced entries are similar in content and format to the existing page 2 of #Q1. There are indications that the handwritten "JD" initials on page 2 may have been written by a different writer than the handwritten "JD" initials on pages 1 and 3.
F8KARZ	There are indentations on page 3 that can be sourced from the writing on page 1. Nil indentations were found on page 2. Nil indentations from page 2 appear on page 3. There are a number of unsourced indentations on page 3 which are consistent with being from different page(s) previously on top of page 3. There is an indentation of the numeral "100" that in terms of positioning corresponds to the handwritten entry "200" on page 2. There is an indentation of the numeral "25" that in terms of positioning corresponds to the handwritten entry "50" on page 2. There is an indentation of the numeral "20" that in terms of positioning corresponds to the handwritten entry "30" on page 2.
FCQ9Z6	It was observed that all three pages of the document (item Q1) has been made with a printer/copier based on electrophotography. On all three pages entries written with a pen were observed. It was observed that the optical properties of the written entries on the middle page of the document differ from the optical properties of the written entries on the first and the last page. No significant differences in the optical properties between inks on the first and the last page were observed. On the last page of the document, indented impressions from the written entries on the first and the middle page were observed. Indented impressions of the disputed entries, that are located on the middle page (pet deposit, pet rent and parking fee), do not match the corresponding entries written on the middle page. The indented impression of the disputed entry on the first page (utilities) observed on the

TABLE 3

WebCode	Conclusions
	last page matches the written entry on page 1. Based on the findings listed above it is concluded that the document has been altered by substituting the middle page of the document.
FMJAV6	Lease was altered in the second sheet (change)
FXVLWX	The questioned rental agreement, Exhibit 1, was altered.
GBAFE2	In the Lease Contract issued by "Pinecrest Village Condominiums" in the name of C. JAMES DUNN, constant of 3 pages, the following could be observed: Through the multispectral analysis of the manuscript filling in black ink by means of Infrared RG695 nanometers and Fluorescence RG725 differences were observed, since the filling of sheet 2 shows total absorption and sheets 1 and 3 show Transparency (Infrared RG 695) and Luminescence (Fluorescence RG 725). After the Surcos Revelation analysis by means of the ESDA 2 team, it could be observed that sheet number 2 "Does not show Revealed", that is to say, that it lacks the furrows of sheet number 1, besides, that the sheet number 3 " If it shows Revealed "showing rows corresponding to the first and second page that was before they replaced it with the current one, where the legends" 25 "and" 100 "stand out since they are digits different to those located in the current record 2. Therefore it is determined that IF PRESENTS ALTERATION
GGTA2A	Page 2 was not part of the Rental Agreement at the time when pages 1 and 3 were filled out. It has no indentations from page 1 and its writing has left no indentations on page 3. It does not have the embossing of a paper clip present on both page 1 and page 3. It was written in a different ink from pages 1 and 3. The page 2 initials are different from those on pages 1 and 3 suggesting non-common authorship. There was a page 2 that was present at the time of the writing of pages 1 and 3. Evidence of its presence can be inferred from the variations in darkness of the indentations on page 3. The indentations of all of the visible writing of page 1 are lighter than the indentations of writings that match the content and format of page 2. A page between page 1 and page 3 would explain the lighter indentations. The substituted page 2 shows different amounts for the pet deposit, additional monthly rent, and parking fee than the original, missing page 2 shown in the indentations on page 3. Page 1 has not been altered, evident in that all of its visible writing superimposes the indentations on the ESDA lift of page 3; therefore, the utilities have not been altered.
GHW2VZ	It is my opinion that: 1. The Rental Agreement has been altered by substituting page 2 of the document. 2. The Rental Agreement was originally made out for a \$100 pet deposit, an additional monthly rent of \$25 and a monthly parking fee of \$20.
GUR8NY	Q1 has been altered by replacing page 2.
H7K88W	there is a substitution alteration of page two when replaced by the original
H7ZBPM	1. Laboratory item #1 Q1c (front and back), Invoice #Q112408 was examined utilizing oblique/side lighting and ESDA (Electrostatic Detection Apparatus) for the possible presence of indented impressions. Multiple impressions were found. See page 3 for interpretation. Q1c front was used for reporting purposes. 2. Laboratory item #1 Q1a and Q1b, Invoice #Q112408 were examined utilizing oblique/side lighting and ESDA (Electrostatic Detection Apparatus) 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. Visual, microscopic, and ESDA (Electrostatic Detection Apparatus) examination revealed the presence of a paper clip impression on Q1a and Q1c. No impression from a paper clip was found on Q1b. 4. Laboratory item #1 Q1b, (page two) Invoice #Q112408 could not have originated from the same source as Laboratory item #1 Q1a and Q1c (page one and page three), Invoice #Q112408 (Q1a, Q1c) based upon observed dissimilarities (ink and paper) utilizing the VSC (Video Spectral Comparator). 5. Utilizing the VSC (Video Spectral Comparator), revealed that the document was altered in the following manner: Page two of the lease agreement (Q1b) was altered by a page substitution. Examination, Comparison, and Evaluation of the questioned initials resulted in the following opinions: 6. Laboratory Item #1 Q1a initials "JD", Invoice

## TABLE 3

WebCode	Conclusions
	<p>#Q112408 and Laboratory item #1 Q1c initials "JD" Invoice #Q112408 Probably may have* been written by a common author. The following limitations preclude a more definitive opinion: Limited quantity of identifiable features within the questioned initials and a limited quantity of writing within the questioned initials. 7. Laboratory item #1 Q1a, Q1c initials "JD" Invoice #Q112408 and Laboratory Item #1 Q1b initials "JD", Invoice #Q112408 probably may not have* been written by a common author. The following limitations preclude a more definitive opinion: Limited quantity of identifiable features within the questioned initials and a limited quantity of writing within the questioned initials.</p>
H8H9F9	<p>The ink present on Q1b reacts differently to infrared light than the ink on Q1a and Q1c. The indentations on Q1c are different than the handprinting and numerals that are written on Q1b. This is evidence that Q1 was altered; specifically that Q1b is an insertion. This is a definitive conclusion with the highest degree of certainty.</p>
HDGXBC	<p>Once the questioned lease agreement is analyzed, it is determined that this was altered</p>
HJ327L	<p>Visual, microscopic and instrumental examination of Q1 revealed the following: The Rental Agreement in Q1 was altered from its original state. Page 2 was not originally part of the Rental Agreement. The paper and pen ink used on page 2 of Q1 item #1 could be differentiated from pages 1 and 3 utilizing various light sources. The paper in Q1 was processed for indented writing. Indented writing was developed on page 3. Some of the indented writing was consistent the some of the written entries from page 1 and the remainder of the indented writing is not consistent with the written entries from page 2. The indented writing amounts and initials on page 3 are different from page 2. In addition, paper clip marks were noted on pages 1 and 3 of Q1 but not on page 2. All items are available for return, including images created during this examination.</p>
HKWPMV	<p>1. The question Rental Agreement has been altered. 2. Exhibits 1(1-3) were examined for any legible indented writing images. Indented writing images were found on Exhibit 1(3). No indented writing was found on Exhibits 1(1-2).</p>
HNPELX	<p>Based on the totality of all the evidence obtained from a thorough and complete forensic examination, it is my opinion that the three (3) page Rental Agreement was altered by removing page 2 and replacing it with another document wherein the amounts were changed from: \$100 to \$200 (deposit), \$25 to \$50 (additional rent), \$20 to \$30 (parking).</p>
J3U8CQ	<p>The Rental Agreement of Pine Village was altered by changing the second page. I could see changes in the writing characteristics and absence of indentation.</p>
J8YN9G	<p>In course of examination evidences were found supporting alternation of the questioned agreement. The second page of the agreement was replaced.</p>
JMGYCM	<p>Exhibits Q1(1)a, Q1(1)b, Q1(2)a, Q1(2)b, Q1(3)a and Q1(3)b were examined visually, microscopically and/or with alternate light sources. The results of those examinations are as follows: Exhibits Q1(1)a, Q1(1)b, Q1(2)a, Q1(2)b, Q1(3)a and Q1(3)b were examined for the presence of indented handwriting and/or machine-created impressions using the Electrostatic Detection Apparatus (ESDA). A paper clip indentation and vertical machine-created indentations were observed on Exhibit Q1(1)a. No indented handwriting was observed. A paper clip indentation, handwriting and vertical machine-created indentations were observed on Exhibit Q1(1)b. Vertical and diagonal machine-created indentations were observed on Exhibit Q1(2)a. No indented handwriting or paper clip indentation was observed. Handwriting and vertical and diagonal machine-created indentations were observed on Exhibit Q1(2)b. No paper clip indentation was observed. A paper clip indentation, handwriting and vertical machine-created indentations were observed on Exhibit Q1(3)a. A paper clip indentation, handwriting and vertical machine-created indentations were observed on Exhibit Q1(3)b. The vertical machine-created indentations present on Exhibits Q1(1)a, Q1(1)b, Q1(2)a, Q1(2)b, Q1(3)a and Q1(3)b are of the same type and design; however, the diagonal machine-created indentations present on Exhibits Q1(2)a and Q1(2)b are of a different type and design and were not observed on Exhibits Q1(1)a, Q1(1)b, Q1(3)a, and Q1(3)b. Please see the attached images for details. The questioned handwritten entries on Exhibits Q1(1)a, Q1(2)a and Q1(3)a were prepared by using black ballpoint ink;</p>

## TABLE 3

WebCode	Conclusions
	however, ink differences were observed between Exhibits Q1(1)a and Q1(3)a when compared with Exhibit Q1(2)a. Please see the attached images for details. Due to only slight differences with the optical properties of the paper in Exhibits Q1(1)a and Q1(3)a when compared to Exhibit Q1(2)a, the exhibits could neither be identified, nor eliminated as having originated from a common source; however, the paper is of the same type and design. It was also determined that the machine-generated entries on Exhibits Q1(1)a, Q1(2)a and Q1(3)a were prepared by using toner printing technology. The questioned handwritten entries on Exhibits Q1(1)a, Q1(2)a and Q1(3)a appear to be naturally written and contain a sufficient amount of characteristics to be compared with submitted known writing. Exhibits Q1(1)a, Q1(1)b, Q1(2)a, Q1(2)b, Q1(3)a, Q1(3)b and ESDA indentation lifts were digitally scanned and the digital images will be retained. [Attachment not provided by participant]
JQQ2ET	This allows to conclude that the page two of the contract, it features different from pages 1 and 3.
JVYAPN	During technical document examination, it was found that questioned document Q1 was altered by exchanging the second page with the changed content in the items pet deposit and rent, and parking fee.
JXYF6U	Page 2 in Q1 is not consistent in several areas to page 1 and 3 in Q1 in the following: no paper clip indentation in the upper, right edge of the page; slightly different fluoresce intensity under ultraviolet light; the black ink writing does not drop out in infrared; and it was not in contact with page 1 or 3 when the writing on all the pages occurred. The unsourced indented impressions deciphered on the lifts uniquely identified as Q1A5 and Q1A6 indicate that there was a page with writing similar to the format of page 2 in Q1, but different execution and numbers at the top. These indented impressions also show that the document was in contact with page 3 in Q1 when the writing occurred. The source of these indented impressions was not located in the documents submitted.
JZ6ZRU	Evidence was observed that Item Q1 has been altered. This was noted in the following examinations: Infrared examination of Item Q1 reveals the ink appearing on page 2 is different than the ink appearing on pages 1 and 3. The pages of Item Q1 were examined for indented writing impressions. Indentations were developed on page 3 that were sourced to the original writing appearing on page 1 and appear to be: 685 Tr(?)top Way #4 /1/ Pinecrest Home 300 JD 60 30 JD 60 5 5th 50 JD JD 1 dog JD Additional indentations appearing on page 3 that are not sourced to any page in Item Q1 appear to be: 100 25 JD #6854 20 JD JD JD JD JD JD JD. These indentations are subject to more than one interpretation. No other un-sourced indentations were observed on the remaining pages. Pages 1 and 3 also have indentations at the top left corner from what appears to be a paper clip. These indentations do not appear on page 2. The hand printed letter "D" appearing in the initials "JD" on page 2 are a one stroke letter formation whereas the hand printed letter "D" in the initials "JD" on pages 1 and 3 are a two-stroke letter formation. Due to the lack of features present for a handwriting comparison, no conclusion is offered as to whether the initials "JD" appearing on pages 1-3 were written by the same person. [Participant submitted manually formatted data that was not transferrable into the final report, therefore, data is presented as is.]
K2778A	In the lease agreement studied, substitution of the second sheet was found.
K3JH4U	The lease agreement between Mr. James Dunn and Pinecrest Village Condominiums was altered on page 2. The lease agreement WAS ALTERED.
KBGYP9	THE DOCUMENT IS ALTERED
KE7YFQ	In my opinion, page 2 of Q1 has been substituted and now bears amount entries for Pet deposit & rent and Parking which are different to those originally entered. I find no signs of alteration to the Utilities amount entry on page 1.
L6QWAF	Based on the examination and comparison of the submitted evidence, the submitted 3-Page Lease Agreement has been altered as follows: The Pet Deposit was changed from "100" to "200". The Additional Monthly Rent for Pets was changed from "25" to "50". The Monthly Parking Fee was changed

TABLE 3

WebCode	Conclusions
	from "20" to "30". These alterations occurred via a substitution of Page 2 of the contract as evidenced by a different ink used on Page 2 versus Pages 1 and 3 as well as indentations of the original Page 2 entries on Page 3.
LCMARE	Due to the scenario states that the renter's signature on page 3 of the rental agreement is genuine. Therefore, based on the examination mentioned above the second page of the rental agreement is not genuine, but is altered and replaced afterward. In my opinion, the questioned agreement was altered.
LEFNUM	the questioned agreement was altered. The pet deposit, rent and parking fee, were altered. The original handwriting was "100", "25", and "20" respectively.
LFABAX	Report Wording: 3.1) Findings: 1) Examination, comparison, and evaluation of the purported original three page Lease Agreement (#01.01, #01.02, #01.03) utilizing visual, microscopic, infrared/infrared luminescence, ultraviolet lighting, and indented impression examinations revealed that Items #01.01 and #01.03 are each similar in physical characteristics (for example- paper stock, optical brightening, handwritten ball pen ink) and Item #01.02 is dissimilar in regards to those same characteristics. 2) The purported original three page Lease Agreement (#01.01, #01.02, and #01.03) was altered by the substitution of page #01.02. Date Range of Testing Activities: 2/25/19 to 3/13/19. 3.2). Remarks: 3.2.1) Items 01.01, 01.02, and 01.03 are being retained by the Laboratory at this time. 3.2.2) The staple which was removed from the 3 page lease and has been itemized as item 01.04 and is being retained by the Laboratory at this time. 3.2.3) The ESDA lifts generated from items 01.01, 01.02, and 01.03 have been itemized as item 01.05 and are being retained by the Laboratory at this time. 3.2.4) If testimony is anticipated, please allow at least 3 weeks for the necessary court chart preparation. 3.2.5) Date Range of Testing Activities: 2/25/2019 to 3/13/2019
LTNY3Q	The lease agreement on behalf of Mr. Dunn was altered on the second page of the lease.
M8DVZJ	The analyzes show that on page 3 of the lease agreement, indented impressions not coming from the handwritten mentions of the different pages are revealed. These indented impressions are the same type as the handwritten mentions on page 2 but the amounts are different (100\$, 25\$ and 20\$ instead of 200\$, 50\$ and 30\$). Pen inks on pages 1 and 3 are not the same composition than the pen ink on page 2. As a result the lease agreement has been altered by substituting the page 2.
MAJ66A	The leasing agreement was altered by the substitution of the second page.
ME7PVE	My opinion is based on the observations I made during my examinations and my ability to evaluate these observations, based on the training and experience I have in the area of document examination. It is my opinion that the questioned document was altered and that page 2 of the questioned document was substituted into the questioned document. There is evidence that the pet deposit, the monthly pet fee, and the monthly parking fee were changed by the addition of page 2. Page 1 and Page 3 were not altered. These opinions are drawn to a reasonable degree of scientific certainty and based on recognized scientific principles.
ML82RC	After analyzing the evidence in this case, the following opinions have been formed. It has been determined that the Lease Agreement in Submission 001 was altered. This is the strongest statement of opinion expressed by document examiners. Significant discrepancies were observed between page 2 and pages 1 and 3. This opinion is not a testament to any nefarious activity, only that the questioned Lease Agreement has been altered. Submission 001 was examined visually, with sidelighting, and with the electrostatic detection apparatus (ESDA) for the presence of indentations from indented writings. Indentations of this sort are often caused on one document when writing is done on another document that is physically on top of it. Sidelighting revealed indentations from a paper clip at the top of Pages 1 and 3. No paper clip indentations were revealed on Page 2. ESDA processing revealed indentations on Page 3 from writing different than the writing found on Page 2. The amounts for the Pet Deposit, Pet Rent, and Parking Fee in the indentations were \$100, \$25, and \$20, respectively. Those same amounts written on Page 2 are \$200, \$50, and \$30. A comparison chart is included in this report. There are no indentations on Page 2 from the writing on Page 1. No other unexplainable indentations were revealed.

TABLE 3

WebCode	Conclusions
	As per [Laboratory] standard operating procedures, the ESDA lifts were given a Submission number and have been returned with the evidence. Submission 001 was examined with the Video Spectral Comparator (VSC). The ink on Page 2 reacted differently than the ink on Pages 1 and 3. All three sheets of paper reacted similarly to Ultraviolet light. All three pages contain one set of staple holes in the upper left hand corner. All of the staple holes align correctly. Via Adobe Photoshop, grids were applied to all three pages at 1.955 cm per grid line. The printed text, of the same font size, aligned the same on all three pages. All requested examinations have been completed on this evidence. Submission 001 will be forwarded to the [Laboratory] and will be returned to the submitting agency upon completion of the analysis. If further examinations are required, these submissions should be resubmitted along with any additional materials.
MMVEAU	Pertaining to the purported Pinecrest Village Condominiums Rental Agreement, Rental Amount, Security Deposit, Utilities and Parking Fees on page two of the rental agreement do not appear altered. That being stated, page 1 and page 3 of the Rental Agreement are original documents and page 2 is a copy. This document examiners professional opinion is that it is probable the amounts listed above were not altered.
MTC3RV	Examination of document Q-1 revealed evidence of alteration by page substitution of page 2. Indented writing was recovered from page 3 of document Q-1. The recovered entries included impressions of page 1 and the original page 2 of document Q-1. Impressions corresponding to page 1 did not reveal any differences from the entries recorded on page 1. Impressions corresponding to section 7 on page 2 of document Q-1 originally read that the initial pet deposit was \$100 (not \$200) and that the monthly pet rent was \$25 (not \$50). Impressions corresponding to section 8 on page 2 of document Q-1 originally read that the monthly parking fee was \$20 (not \$30).
MUPJZ3	Based on Standard Operating Procedures of the Handwriting and Questioning Documents division our conclusion is based on proven findings and facts and our conclusions is as follows: Based on expertise results I conclude that on document of exhibit Q1: page one (1)and three(3)have different paper florescence, pen and initials compared with page two(2). From the examination of the tones text and comparison between pages one (1), two(2) and three (3)results that they are printed with the same printing technique" black toner laser-jet" using the same font and size of letters. Also based on the examination and comparison of dhe pages between each other using 365 nm Ultra violet bean and 830nm Infra-Red bean, results that pages one (1) and three(3) have same florescence and they both have different florescence from page two (2). From the document examination with different wave length results that on page one (1) and three (3) the black ink of the pen under 830 nm Infra- Red beam doesn't have luminescence, whilst on page two(2) the black ink of the pen under 830nm Infra-Red beam has luminescence. From the examination of the document by using Foram 685/2 results that black ink of the pen on page (1) and page three (3)has different chemical compound from the black ink of the pen on page two (2). Also from the examination and comparison of the initials "JD" results that the identification features of the initials on page one (1) and page three (3) doesn't match with the identifications feature of the initials on page two (2).
MXK2N6	The results of the examination extremely strongly support that the questioned agreement was altered (Level +4). The results are at least 1 000 000 times more probable if the main hypothesis is true compared to if the alternative hypothesis is true.
MYL8GA	1.-ALTERATION METHOD: The document if it presents alterationbecause if it presents characteristics of alteration. 2.-METHOD FOR THE EXAMINATION OF DEVELOPMENT OF SURCOS: The document does present marks.
N38FJP	The differences in the luminous absorption and fluorescence behavior of the manuscript inks of page 2 of the lease signed by Mr. JAMES DUNN, allowed to conclude the substitution alteration of the document, consisting in the replacement of the original page by the one analyzed.
NF4EER	The findings provide extremely strong support for the proposition that page 2 of the questioned agreement Q1 has been substituted.

TABLE 3

WebCode	Conclusions
NKFLHH	<p>Exhibits Q1-1(a and b) through Q1-3(a and b) were examined visually, microscopically, and with alternate light sources. Exhibits Q1-1(a and b) through Q1-3(a and b) were compared to each other and the following was determined: Exhibit Q1-2(a and b) was substituted into the agreement; however, when this substitution occurred cannot be determined. No characteristics of alterations were observed on Exhibits Q1-1(a and b) and Q1-3(a and b). These results are due to the following: Differences were observed in the paper characteristics between Exhibit Q1-2(a and b) and Exhibits Q1-1(a and b) and Q1-3(a and b). These differences were: Reaction to alternate light sources, Paper surface characteristics (e.g., smoothness, color, impressions); Due to these differences, there are indications the paper of Exhibit Q1-2(a and b) may not have originated from the same common source (e.g., ream of paper) as Exhibits Q1-1(a and b) and Q1-3(a and b). This result is limited by the lack of information about prior care of the paper and the absence of known paper submitted for examination and comparison. Please see attached images. Differences in the writing ink were observed between Exhibit Q1-2a and Exhibits Q1-1a and Q1-3a. These differences were: Reaction to alternate light sources, Physical ink characteristics (e.g., color and striations); Due to these differences, it was determined that there are indications the writing ink on Exhibit Q1-2a may not have originated from the same common source (e.g., writing instrument) as Exhibits Q1-1a and Q1-3a. This result is limited due to the ink appearing on separate sheets of paper. Please see attached images. Exhibits Q1-1(a and b) through Q1-3(a and b) were evaluated for the presence of indented handwriting, marks, and/or machine-created impressions using side-lighting and the Electrostatic Detection Apparatus (ESDA). Indented handwriting, marks, and machine-created impressions were observed on Exhibits Q1-1(a and b) through Q1-3(a and b) as follows: Indented writing was observed on Exhibit Q1-1b which was sourced to the writing on Exhibit Q1-1a; Indented writing was observed on Exhibit Q1-2b which was sourced to the writing on Exhibit Q1-2a; Indented writing was observed on Exhibit Q1-3a which was sourced to the writing on Exhibit Q1-1a; Indented writing was observed on Exhibit Q1-3b which was sourced to the writing on Exhibit Q1-1a and Q1-3a; Indented writing was observed on Exhibits Q1-3(a and b) which was not sourced to the writing on Exhibits Q1-1a through Q1-3a; A paperclip impression was observed on Exhibits Q1-1(a and b) and Q1-3(a and b); Machine-created impressions were observed on, and are similar between, Exhibits Q1-1(a and b) through Q1-3(a and b); No further indented impressions were observed on Exhibits Q1-1(a and b) through Q1-3(a and b); Please see the attached images for details. The machine-generated text on Exhibits Q1-1a through Q1-3a was produced by toner technology. The machine-generated text and impressions are similar between Exhibits Q1-1(a and b) through Q1-3(a and b) indicating Exhibits Q1-1(a and b) through Q1-3(a and b) may have originated from the same common source (e.g., office machine). This result is limited by an insufficient amount of individualizing characteristics and the absence of known documents submitted for examination and comparison. There are indications one writer (Writer 1) may have written the questioned hand printed "JD" initials on Exhibits Q1-1a and Q1-3a and the unsourced indented "JD" initials on Exhibit Q1-3a ESDA Lift; however, due to the limited amount of characters (i.e., two letters), the evidence falls short of that necessary to support a conclusive opinion. There are indications one writer (Writer 2) may have written the questioned hand printed "JD" initials on Exhibit Q1-2a; however, due to the limited amount of characters (i.e., two letters), the evidence falls short of that necessary to support a conclusive opinion. There are indications one writer (Writer 3) may have written the remaining questioned entries on Exhibits Q1-1a through Q1-3a, excluding the dates and signatures on Exhibit Q1-3a; however, due to the limited amount of comparable entries, the evidence falls short of that necessary to support a conclusive opinion. The dates and signatures on Exhibit Q1-3a and the remaining unsourced indented writing on Exhibit Q1-3a ESDA Lift could neither be identified, nor eliminated, as having been written by one or more writers or by Writers 1, 2, and 3 due to the limited amount of comparable entries. Due to limited amount of characters and comparable entries, no conclusion could be rendered regarding whether or not Writers 1, 2, and 3 were written by the same writer. [Attachment not provided by participant]</p>
NKWMER	<p>It was determined the Item 1 (Item Q1) questioned agreement was altered due to inconsistencies between page 2, and pages 1 and 3, indicating page 2 was substituted. Indented writing from page 1 of Item 1 (Item Q1) was observed on page 3 using side lighting and the Electrostatic Detection Apparatus (ESDA). It should be noted indented writing was observed on page 3 which depicts monetary amounts that are different from the amounts observed on page 2. In addition, pages 1 and 3 appear to contain the impression of a paperclip in the upper left corner while this impression was not observed on page 2.</p>

TABLE 3

WebCode	Conclusions
	No other indented writing was observed on pages 1 and 2. Optical ink differences were observed between page 2 of Item 1 (Item Q1) and pages 1 and 3. The background and format on Item 1 (Item Q1) were prepared using a toner printing process with original inked entries. The toner printing process is common on various brands of office machines. Additional observations and assessments have been made regarding the submitted items and recorded for possible future comparisons.
NWWBGM	There is strong support for the proposition that the submitted questioned document was altered with page 2 substituted from the original prepared document.
NXJYQ3	(a). Examination of Item Q1 showed the following: i). Page 2 was not underneath page 1 when handwriting and signatures were written on page 1. ii). Page 3 was underneath page 1 when handwriting and signatures were written on page 1. iii). A similar type of paper, printing process, page layout, font type and size were used to produce pages 1, 2 and 3. iv). Pages 1, 2 and 3 were stapled together once at the same time. v). Pages 1 and 3 were clipped together once without page 2. vi). A same writing ink was used to write the signatures and handwriting on pages 1 and 3 but it was different to the ink used on page 2. vii). Signatures (JD) on pages 1 and 3 were written by a same person but different to the writer of the signatures on page 2. (b). Based on the above findings, in my professional opinion, the examination of Item Q1 revealed there was evidence of alteration. Therefore the questioned lease agreement (Item Q1) WAS ALTERED following its completion by the resident.
PBNMCT	This report contains the results of the questioned document examinations. Results of Examinations: It was determined that the Item 1 (Item Q1) document was altered by page substitution due to the following characteristics: Indented writing of Item 1 (Item Q1) page 1 was observed on Item 1 page 3, however no indented writing of Item 1 (Item Q1) page 1 was observed on Item 1 (Item Q1) page 2. Indented writing of "JD" initials was observed on Item 1 (Item Q1) page 3 that did not overlay with the "JD" initials on Item 1 (Item Q1) page 2. Indented writing of the pet deposit and rent are "100" and "25", respectively on Item 1 (Item Q1) page 3, differing from the corresponding entries on Item 1 (Item Q1) page 2. Indented writing of the parking fee is "20" on Item 1 (Item Q1) page 3, differing from the corresponding entry on Item 1 (Item Q1) page 2. The ink on Item 1 (Item Q1) pages 1 and 3 reacted differently than the ink on Item 1 (Item Q1) page 2 using various light sources. A paper clip impression was observed on Item 1 (Item Q1) pages 1 and 3, but was absent from Item 1 (Item Q1) page 2. The indented writing that was detected on Item 1 (pages 2 and 3) was observed using an Electrostatic Detection Apparatus (ESDA) and side lighting. Five ESDA lifts bearing the indented writing are considered secondary evidence and have been designated Item 2. No indented writing was observed on Item 1 (page 1).
PBVLX9	Item 1.2 displays features and characteristics commonly associated with it having been substituted between Items 1.1 and 1.3. It is probable that the initials (JD) on Item 1.2 were written by a different writer than the one who wrote the "JD" initials on Items 1.1 and 1.3. One ESDA lift sheet was created from each of Items 1.1 through 1.3 and were made sub-items 1.1.1, 1.2.1 and 1.3.1. The transparent plastic-like lifts used to recover the indentations are being returned to you in evidence container #A. The lifts should be retained as evidence.
PJBAQP	Item Q1 was altered according to the infrared light results (TIR - transparent and NO TIR - no transparent) and the handwriting examination of letters JD which were different in page 2, from page 1 and 3.
PNNDX9	Item No. 1. Description: Original Questioned "Lease Agreement for Pinecrest Village Apartment" (03 pages) claimed to be altered. The case consists of total 01 evidence item. Result(s) & Conclusion(s): After careful examination of item No. 01 using Video Spectral Comparator (VSC-6000, Software Version 6.6) and Electrostatic Detection Apparatus (ESDA2), it is concluded that item No. 01 was found to be altered. The conclusion is based on following observations: 1) Observations using Video Spectral Comparator (VSC-6000, Software Version 6.6): a) At least two different kinds of inks/ writing instruments (pens) have been used to write on item no. 01. b) Page 01 & 03 have been filled using one kind of ink/ writing instrument (pen), while page 02 has been filled using another kind of ink/ writing instrument (pen). 2) Observations using Electrostatic Detection Apparatus (ESDA2): a) Indentations corresponding to the writing on page 01 as well as another page were developed on page 03. b) Indentations developed on page 03 did not correspond to the writing on page 02. c) No indentations corresponding to the writing

TABLE 3

WebCode	Conclusions
	on page 01 were developed on page 02. d) The original second page of the three-page lease agreement was substituted for the present second page. The contents of the removed page deciphered from the page 3 were as follows: i. In clause no.7, the deposit amount was \$100 (instead of \$200 as mentioned in present second page), and monthly rent was \$25 (instead of \$50 as mentioned in present second page). ii. In clause no.8, the monthly parking fee was \$20 (instead of \$30 as mentioned in present second page).
PW6R3Y	Some of the writing impressions on page 3 corresponded to the writing on page 1, but none of the writing impressions on page 3 corresponded to the writing on page 2, suggesting that pages 1 and 3 were written as a set but not page 2. In addition, the ink of the writing on page 2 was different from those on page 1 and 3. The evidence shows that page 2 of the Rental Agreement has been substituted.
Q2DN8L	Differences were noted between page 2 and pages 1 and 3. These included the lack of paperclip impression on page 2, the lack of impressions from page 2 on page 3, the presence of other impressions on page 3 noted to be in similar positions to that from page 2, differences in the UV properties of the paper used for page 2 and the differences in IR properties of the ink used in page 2. Given these differences, in our opinion, page 2 has been produced at a different time to pages 1 and 3. The questioned lease agreement has, therefore in our opinion, been altered.
Q8WCLL	According to the analysis carried out for the "tenancy agreement" with the help of video equipment spectral VSC-8000 comparator, was established that the document presents an alternative alteration of the second sheet of the document.
QG7D4H	Indentations recovered on page three of the original Agreement had a dollar amount of \$20 in the position for the monthly parking fee. However, the fee shown on page two of the same document showed a fee of \$30. Also, indentations of the "JD" initials recovered on page three did not align in shape or location with their corresponding initials on page two. An examination using infrared light filtration showed the use of a pen having a different ink formula for page two than the pen used on pages one and three.
QHDDMD	The questioned lease agreement has been altered. The second page of the agreement has been substituted.
QU7X46	According to the analysis carried out, the material provided, considered for the present study and the technical reasoning explained above [Table 2 - Methods and Observations] determines that the questioned lease agreement was ALTERED.
QUWYMR	It was determined that the Q1 document was altered due to differences in the optical characteristics of the writing ink on page 2 compared to pages 1 and 3, differences in binding characteristics, as well as the presence of indented writing on page 3 that indicates page 2 was substituted. The indented writing was observed on Q1 page 3 using the electrostatic detection apparatus (ESDA) and side lighting. The resulting ESDA lift has been retained as secondary evidence and designated Q2. A copy of the ESDA lift is enclosed for your investigative assistance. No indented writing was observed on Q1 pages 1 and 2 using ESDA and side lighting. The indented writing on page 3 includes handwriting from page 1 as well as indented writing that cannot be accounted for. Furthermore, no indented writing was observed on page 3 that can be attributed to page 2. [Attachment not provided by participant.]
RBUBFB	Examination using specialized lighting, magnification and the Electrostatic Detection Apparatus 2 (ESDA2) revealed the following. Exhibit Q1 was altered by page substitution. The original page 2 was removed from Exhibit Q1 and replaced with the current page 2. Examination within the infrared spectrum of light found that the handwritten entries on page 2 were written with a pen that is different from the pen(s) used to complete page(s) 1 and/or 3. Additionally, indented writing developed on the front of page 3 revealed that dollar amounts from the original page 2 differ from those on the current page 2. More specifically, the original pet deposit amount was \$100, whereas the current pet deposit amount is \$200. The original monthly pet rent was \$25, whereas the current monthly pet rent is \$50. The original monthly parking fee was \$20, whereas the current monthly parking fee is \$30. Furthermore, while some of the entries from page 1 were found indented into page 3, none of the entries from page 1

## TABLE 3

WebCode	Conclusions
	<p>were found indented into the current page 2, and none of the entries from the current page 2 were found indented into page 3. Last, it was noted that pages 1 and 3 bear an impression of a paper clip in the upper left corner, whereas page 2 does not bear a paper clip impression. There is no physical evidence that either page 1 or page 3 of Exhibit Q1 has been altered. The appearance of the handwritten entries within the infrared spectrum of light is consistent on each of these pages. There is no evidence of chemical or mechanical erasure. The indented writing developed on page 3 is consistent with the entries appearing on page 1, to include the \$40 entry for the monthly utilities.</p>
RHEWEY	The questioned agreement WAS ALTERED.
RKWH4	According to the analyzes carried out, the material found for the present study and the technical reasons explained above [Table 2 - Methods and Observations], it is determined that the Contractor lease document "Pinecrest Village Condominiums" PRESENTS ALTERATION FOR SUBSTITUTION.
RRW8DZ	The questioned document exhibited evidence of an alteration due to the following: Pages 1 and 3 appear to have a paper clip impression and page 2 does not have any impressions of discernable significance. Page 3 has indented writing that is sourced from the page 1 writing and another unknown document that appears to have similar formatting as page 2 that reads 100, 25, JD (8 times), #6854, and 20. Page 3 has no indented writing from page 2. The writing ink(s) on pages 1 and 3 have different optical ink properties than the writing ink on page 2. This is indicative of the use of different writing instruments on page 2 from pages 1 and 3. There are indications that the handwritten "JD" initials on page 2 is inconsistent with the handwritten "JD" initials on pages 1 and 3.
RUCTMR	<p>Altered Document Examination: The 3-page Pinecrest Village Condominiums Rental Agreement, designated Q1.1-Q1.3, was compared for evidence of an alteration through various examinations (listed below). These examinations revealed that the questioned rental agreement was altered by means of a page substitution of the 2nd page of the agreement. The recovery of indented writing evidence and the impression of an apparent paper clip appearing on pages Q1.1 and Q1.3, but not on page Q1.2, combined with a handwriting examination on the initials found on the pages of the agreement and the recovered indented writing, supports the existence of a previous 2nd page to the document which contained a lower pet deposit (\$100), lower monthly pet rent (\$25) and a lower monthly parking fee (\$20). Indented Writing Examinations: The questioned documents were examined for the presence of any indented writing, typing or other identifying impressions. 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. The front of questioned document Q1.3 bears impressions sourced to the original writing on Q1.1 and other unsourced impressions that appear to read: 25, 100, JD, #6854, 20, JD, JD, JD, JD, JD, JD. The unsourced impressions recovered on Q1.3 are of similar text (excluding "20", "25" and "100") and are in a similar location as the original writing found on Q1.2 but cannot be sourced to this original writing. The unsourced impressions "20", "25" and "100" are in a similar location as the original writing "30", "50" and "200" found on Q1.2. These sourced and unsourced impressions located on Q1.3, imply that Q1.1 and an additional unknown document similar to the form used for Q1.2, but not the actual submitted Q1.2 document, were originally written on while they were on top of Q1.3. Q1.1 and Q1.3 also bear impressions of an apparent paper clip, not present on Q1.2. There were no other meaningful impressions located. The resulting ESDA lifts (electrograph/imaging film) are being supplied to the submitting agency. Writing Examinations: The writing characteristics exhibited in the questioned initials were visually examined then compared. The comparative significance of the characteristics observed were then evaluated and resulted in the following conclusions: The writing characteristics exhibited in the questioned initials were visually examined then compared. The comparative significance of the characteristics observed were then evaluated and resulted in the following conclusions: Q1.2 to Q1.1 and Q1.3: It is probable that the writer of the "JD" initials on Q1.2 did not write the "JD" initials on the Q1.1 and Q1.3 documents. The limited amount of writing to be compared (initials consisting of only a 2-letter combination), hindered the examination and precludes a more conclusive opinion. Q1.2 to ESDA lift Q1.3 Front: There are indications that the writer of the "JD" initials on Q1.2 did not write the unsourced "JD" initials impressions found on the Q1.3 Front ESDA lift. The limited amount of writing to be compared (initials consisting of only a 2-letter combination) and the clarity of the writing in the ESDA lift, hindered the examination and precludes a more conclusive opinion.</p>

## TABLE 3

WebCode	Conclusions
	<p>Q1.1 and Q1.3 to ESDA lift Q1.3 Front: There are indications that the writer of the "JD" initials on Q1.1 and Q1.3 wrote the unsourced "JD" initials impressions found on the Q1.3 Front ESDA lift. The limited amount of writing to be compared (initials consisting of only a 2-letter combination) and the clarity of the writing in the ESDA lift, hindered the examination and precludes a more conclusive opinion. Printing Process Examinations: The questioned documents, Q1.1-Q1.3, 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. Writing Ink Examinations: Various microscopic, infrared, and ultraviolet examinations were used to examine the written ink entries on the questioned documents Q1.1-Q1.3. The ink formulation used to make the written entries on Q1.2 showed a different spectral response when viewed in the infrared spectrum than the ink formulation used to produce the written entries on Q1.1 and Q1.3. However, an opinion on the association or non-association of the ink formulations used to produce the written entries cannot be made because the written entries are on different substrates. Paper Examinations: The questioned sheets of paper, Q1.1-Q1.3 were examined with no visible watermarks observed. The three 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. However, it should be noted that paper of this type is produced in mass quantity and is available to the average consumer and this should not be construed as a positive identification.</p>
T2XRE8	<p>The original second page of Exhibit Q1 has been removed and substituted with the current page 2. The current page 2 of Exhibit Q1 was written with different ink(s) than that used to produce the entries on pages 1 and 3 or Exhibit Q1. Decipherable impressions(e.g. indented writings) of the entries on the original (missing) page 2, are located on page 3. These impressions revealed different 'JD' entries and dollar amounts than currently reflected in paragraphs 7 and 8 of the submitted page 2. The entry '200' and '50' on page 2, paragraph 7 of the submitted page 2, was '100' and '25' on the original (missing) page 2. The entry '30 on page 2, paragraph 8 of the submitted page 2, was '20' on the original (missing) page 2.</p>
T3G69N	<p>Results of Examinations: It was determined that Item 1 (Item Q1) was altered due to the following: INDENTED WRITING: Using the Electrostatic Detection Apparatus (ESDA) and side lighting, indented writing was observed on page three of Item 1 (Item Q1) which is inconsistent with the second page (page two) of the original Item 1 (Item Q1). One ESDA lift, which is used to capture and retain the indented writing, was labeled Item 2 and is considered secondary evidence. No other indented writing was observed on Item 1 (Item Q1) pages 1 and 2. INK EXAMINATIONS: Using the Video Spectral Comparator 8000 (VSC), optical inconsistencies were observed during the examination of page two and pages one and three of Item 1 (Item Q1). FASTENING/BINDING MARKS: Fastening/Binding marks were observed on pages one and three of Item 1 (Item Q1) and not on page 2 of Item 1 (Item Q1).</p>
T7XCV3	<p>THE QUESTIONED AGREEMENT WAS ALTERED</p>
T8RZBC	<p>It is my opinion there is qualified support that the document has been fraudulently altered.</p>
TAYFMP	<p>Results of Examinations: Alterations were detected on Item 1 (Item Q1). The following observations were made: The original Item 1 (Item Q1), page 2 has been replaced with a new page. Indented writing using the Electrostatic Detection Apparatus (ESDA), designated Item 2, was observed on Item 1 (Item Q1), page 3. No additional indented writing was observed on Item 1 (Item Q1), pages 1 and 2. Indented writing revealed for section "7. PETS", the original additional deposit was in the amount of \$100, not \$200 and the additional monthly rent was in the amount of \$25, not \$50. Indented writing revealed for section "8. PARKING", an original monthly parking fee of \$20, not \$30. The "JD initials on Item 1 (Item Q1), page 2 are dissimilar to the "JD" initials on pages 1 and 3. Paper clip impressions were observed on Item 1 (Item Q1), pages 1 and 3. No paper clip impression was observed on Item 1 (Item Q1), page 2, indicating pages 1 and 3 were at one time attached. Using special filters and lighting, ink observations were observed on Item 1 (Item Q1), page 2, that were optically different from pages 1 and 3. Additional indented writing observations revealed that the Item 1 (Item Q1), page 1 original handwritten entries appear as indented writing on Item 1 (Item Q1), page 3, indicating that page 3 was in contact with page 1 when these handwritten entries were made. Therefore, nothing was observed to indicate the Item 1 (Item Q1) page 1 handwritten entries (first paragraph through "6. OCCUPANTS")</p>

TABLE 3

WebCode	Conclusions
	were altered to include utilities and rent information on page 1. Additional assessments and observations have been made on the submitted items and recorded for possible future comparisons.
TCB49A	[No Conclusions Reported.]
TVGMWW	<p>Exhibit Q1 was altered by the substitution of the current middle page in place of the original middle page. The examination revealed a combination of characteristics of the middle page that are significantly different from the top and bottom pages of Exhibit Q1. Specifically, microscopic, instrumental and comparative examinations of the Exhibit Q1 revealed the following: The person who wrote the initials "JD" on the middle page probably did not write the initials "JD" on the top and bottom pages. The brevity of the handwriting limited the examination. Indentations from the handwriting on the top page were developed on the bottom page indicating that the bottom page was beneath the top page when the handwritten entries on the top page were written. Handwriting from the top page, however, was not detected as indented writing on the middle page indicating the middle page was not beneath the top page when the handwritten entries on the top page were written. The handwritten entries on the middle page were not the source of the indented handwriting impressions that were developed on the bottom page, indicating that the bottom page was not beneath the middle page when the handwritten entries on the middle page were written. Indented impressions of the handwritten numerals "25", "100" and "20" were developed on the bottom page of Exhibit Q1. These indented impressions did not originate from the top or middle pages of Exhibit Q1 but occupy the same relative positions as the disputed handwritten entries "50", "200" and "30" visible on the middle page of Exhibit Q1. Accordingly, the indentations of the numerals "25", "100", and "20" on the bottom page appear to have been created from handwriting performed on the original Exhibit Q1 middle page. When examined under exactly the same infrared illumination and filtering conditions, the ink used for the handwritten entries on the middle page remained visible while the ink used for the handwritten entries on the top and bottom pages became invisible. This indicates that a writing ink with different properties was used for the handwritten entries on the middle page than was used on the top and bottom pages. The top and bottom pages of Exhibit Q1 bear clear and distinct indented impressions that appear to have been made by a paperclip, however, no evidence of a paperclip impression was detected on the middle page. This indicates that the Exhibit Q1 middle page was not fastened together with the top and bottom pages by a paperclip. No evidence of disturbance was detected regarding the staple that fastens the top, middle, and bottom pages together. These observations indicate that the Exhibit Q1 document was at one time held together using a paper clip but was later stapled together after the current middle page was substituted for the original middle page. No evidence of alteration was detected regarding the disputed handwritten entry on the top page of "1200" dollars per month for rent.</p>
TXKWRJ	The second sheet of the lease was altered by the method of replacing the entire sheet, in terms of the content and values of the manuscript texts do not have the same characteristics as the first and third pages of the contract.
U3GHFG	Pages 1-3 of document Q1 was produced by an electrophotographic process using dry black toner with handwritten entries completed with black colour ink. Optical differences in the ink were observed between the handwritten entries on page 2 when compared to those on pages 1 and 3. Indentation development on the obverse side of page 3 disclosed indented writings from page 1 and other un sourced entries that are similar in layout to those on page 2 but different in content. Accordingly, the evidence provides strong support for the proposition that document Q1 was altered, specifically that page 2 was substituted.
U6M34G	The following set of competing propositions was considered: H1: The lease agreement was completed in a contiguous and homogeneous manner with no alteration to any information after completion, versus H2: The lease agreement was altered to change some of the information after its initial completion. The evidence outlined above provides very strong support for proposition H2 (that some information on the lease agreement has been altered post-completion), rather than proposition H1 (that the lease agreement was not altered after completion). Specifically, the amounts relating to the pet deposit and rent, and the parking fees appear to have been increased as outlined earlier. Please note, however, that there is no indication of alteration to the amount regarding the utilities on paragraph 5, of page 1. In

TABLE 3

WebCode	Conclusions
	terms of the method of alteration, the evidence also strongly supports the belief that a complete page substitution was made for page 2 of the original lease agreement.
U8PPWK	Infrared light indicates that a different ink was used on page 2 than was used on pages 1 & 3. The letter "J" on page 2 has a retrace at the top left of the letter that is not found in the initials on page 1 & 3.
ULA8N4	The three-page agreement (Q1) was prepared using a toner printing process and the handwritten entries were made using black-colored ballpoint pen ink. Ink comparisons were conducted using infrared light sources and the ink on page 2 reacted differently to these light sources than the ink on pages 1 and 3. A paper comparison was conducted using ultraviolet light sources and page 2 did not fluoresce as brightly as pages 1 and 3. An impression of a paper clip was noted near the top left of pages 1 and 3, but not on page 2. Handwriting indentations were recovered on page 3 of Exhibit Q1, but not on pages 1 and 2. Some of the indentations from page 3 could be sourced to the handwriting on page 1. The remaining indentations were unsourced, but are consistent with the type and location of information as is written on page 2 of Q1. The "100" indentation is in a similar location as the inked "200"; the "25" indentation is in a similar location as the inked "50"; and the "20" indentation is in a similar location as the inked "30." This evidence indicates that the current page 2 of Exhibit Q1 was not prepared in the same manner as pages 1 and 3, and a different page 2 was inserted into the contract after it was originally prepared. It also appears through indentations that the 200 for Pet Deposit was 100 on the earlier page 2, the 50 for Pet Rent was 25 on the earlier page 2, and the 30 for Parking was 20 on the earlier page 2.
UPEQYH	On further examination and comparison, I found as follows : i) ESDA examination on page 3 revealed indented writing consistent to handwritten entries on page 1 and also indented writing from an unknown source. The deciphered indented writing from the unknown source was different from the handwritten entries on page 2. ii)The handwritten entries on page 2 showed different ink characteristics from the handwritten entries on pages 1 and 3 indicating that the handwritten entries on page 2 were written using different types of ink from the handwritten entries on pages 1 and 3. Hence, I am of the opinion that this questioned agreement was altered by insertion of page 2.
UQM4FK	The question agreement has been altered. Exhibits 1(1-3) were examined for any legible indented writing. Indented writing from Exhibit 1 and an unknown document was found on Exhibit 1(3). No indented writing was found on Exhibits 1(1-2). A lift of the indented writing found is returned with Exhibits 1(1-3).
UQWQE9	The three (3) page Q-1 Agreement has been altered. The Agreement was altered by a page substitution of the original page 2 with a new page 2 reflecting different terms of the Agreement.
UWR3PN	Finally the second page of this contract is subsequently exchanged. The entries of point 7 and 8 are changed. It is possible that all three pages are printed by the same printer.
UX2WKN	It was determined that Item 1 (Item Q1) was altered via page substitution due to physical, indented writing, and optical ink differences observed between Item 1 (Item Q1) page 2 and the remaining pages. Using the Electrostatic Detection Apparatus (ESDA) and oblique lighting, indented writing was observed on Item 1 (Item Q1) page 3 that was different from the information written on page 2 but consistent with the information written on page 1. Two ESDA lifts, which are used to capture and retain the indented writing, were labeled Item 2 and are considered secondary evidence. No other indented writing was observed on Item 1 (Item Q1) pages 1 and 2.
UYVK2Y	The questioned agreement was altered
V2X3DY	The questioned document was altered
V3CGTL	The evidence shows that Q1 had been altered by substitution with Page 2.
V8LMHZ	The questioned document identified with the code DC-136-2019-DQ-IND1 was altered

TABLE 3

WebCode	Conclusions
VCKUCB	The handwritten entries on page 2 were made using a different typ of ink than the one used on page 1 and 3. Latent pressure pattern of the original page 2 can be found on page 3 of the contract, showing the difference between the actual and the original page 2. Paragraph 7: Fee changed from \$100 to \$200 and from \$25 to \$50. Paragraph 8: Fee changed from \$20 to \$30. No change visible in Paragraph 5, although it is possible that the amount of \$10 was changed to \$40 by simply adding two lines to the existing number (No evidence found). Difference between the signatures (JD) on the examined page 2 and the signatures visible as latent pressure pattern of (original) page 2 on page 3 of the contract. The original page 2 of the contract was replaced by an identical printout. Some of the handwritten entries (Paragraph 7 and 8) were changed (see above) and the signature of the tenant (JD) was forged.
VDMFFK	SWGDOC Standard for Examination of Altered Documents has been used as the standard for examination of this document. Based upon the aforementioned examination results, it is my opinion that this document has been altered.
VGWWX7	Based on the examined features of the three page contract the page 2 is substituted. The second page was printed with the same printer to a different sheet and the handwritten parts were created with a ballpoint pen but with divergent colour. The contract was fixed with a paper clip an its indentations are visible on the 1. and the 3. page but the 2. sheet does not contain paper clip traces. After the page substitution the 3 sheet was fixed by a staple thus there were no any sign of alteration.
VN3K93	The agreement has been altered by the insertion of a new second page. Original agreement held together by a paperclip. Second page removed, new second page printed by same technique on same type of paper - details filled in, in different ink. Newly constructed agreement stapled together.
VPPAVK	In my opinion, the questioned document has been altered through a page substitution of page 2. No other evidence of alteration was detected.
W2CQEQ	Page 2 of the three page questioned document designated Q1 was produced using different writing ink that Pages 1 and 3. In addition, Page 2 was not fastened together with Page 1 and Page 3, for a similar duration of time, with the use of a paperclip. Therefore, it is highly probable Page 2 of questioned document Q1 was not produced and/or stored in the exact same manner as Page 1 and Page 3 and it is highly probable Page 2 was inserted at a different time.
W9CBE2	THE QUESTIONED AGREEMENT DATED ON 1/23/19 IS ALTERED, ACCORD TO THE STUDIES MADE IN THIS REPORT.
WBWNQZ	The document "Pinecrest Village Condominiums / Rentals Agreement" with date "1/23/19", presents ALTERATION due to the change of the second sheet.
WNELMN	A.- The lease agreement WAS ALTERED
WPDLV2	According to the examination results of latent impressions (writing lines and imprint of paper clip) and different fluorescent characteristics (writing ink) page 2 of the contract was substituted. The contract was altered in the way the renter James Dunn states.
WWL8JN	When studying the document under the VSC it is observed that sheets 1 and 3 have a different behaviour to that of sheet 2.
X69YV7	In conclusion, the 3 pages are printed in monochrome, single-component laser. The handwritten statements on pages 1 and 3 react in the same way under infrared and fluorescent lighting. The handwritten mentions on page 2 do not react in the same way as on pages 1 and 3. Page 2 of the contested agreement has been amended.
X9TLUK	It was determined that Item 1 (Item Q1) was altered via page substitution. Indented writing was observed on Item 1 page 3 (Item Q1) using electrostatic processing and side lighting. It should be noted that this writing corresponds in placement to the fillable areas of page 2, however, the indented writing cannot be

TABLE 3

WebCode	Conclusions
	sourced to page 2. Binding marks were observed on Item 1 page 1 and page 3 (Item Q1). It should be noted that these marks were not observed on Item 1 page 2 (Item Q1). An examination of the writing inks on Item 1 (Item Q1), using nondestructive techniques on the VSC 8000, revealed optical differences between the ink on page 2 and the ink on pages 1 and 3. Additional assessments and observations have been made regarding the submitted item and recorded for possible future examinations.
X9WYLN	Examining the three page document excepted, I found that it is forged. In the examinations I performed, that p. 2 isn't the original page that was part of the document, and in my opinion was exchanged. I can't determine whether changes were done to the utilities fee on the first page.
XX3UTW	The lease contract designated as "Pinecrest Village Condominiums Rental Agreement" presents ALTERATION.
XZFREJ	Results of Examinations: It was determined that the Item 1 (Item Q1) Rental Agreement was altered based on indented writing observed on Item 1 (Item Q1) page 3 differing from the visible writing on Item 1 (Item Q1) page 2 (including different amounts in the PETS and PARKING paragraphs) and optical inconsistencies using the Video Spectral Comparator 8000 observed between the inked entries on pages 1 and 3 and those on page 2. Indented writing was observed on Item 1 (Item Q1) page 3 while none was observed on Item 1 (Item Q1) pages 1 and 2 using both oblique lighting and the Electrostatic Detection Apparatus (ESDA). The ESDA lift from page 3 is considered secondary evidence and is designated Item 2.
YATTBM	CONCLUSIONS: The handwriting that are read: "JD" of the filling of sheet 1, has been elaborated by the same person that elaborated the handwritten writing that are read: "JD" of the filling of sheet 3. The handwriting that are read: "JD" of the filling of sheet 2, has not been elaborated by the same person who elaborated the handwriting that are read: "JD" of the filling of sheets 1 and 3. The document under analysis has been altered due to the text that are read: "JD" of sheet 2, it has not been elaborated by the same person who elaborated the texts that are read "JD" on sheets 1 and 3; In addition, the handwriting text shown on sheet 2 has been elaborated with other kind of ink, to the one that elaborated the handwriting on sheets 1 and 3.
YDHHUV	The questioned document does show evidence of tampering through sheet substitution (sheet #2) and differences between information entered, as supported by the groove revealer technique.
YKKJH6	Physical, microscopic, instrumental and comparative examinations resulted in the following finding: The Q1 document has been altered. The original page 2 of the Q1 document has been removed and replaced with the current page 2. This finding is supported by the fact that indentations found on the front of page 3 that match to the ink pen data entries on page 1 were not found on the current page 2. Some indentations on the reverse of page 3 were found that do not correspond with any ink pen data entry on pages 1 or the current page 2. Although it could not be conclusively determined if these indentations were from the original page 2, indentations with the number "100", "25" and "20" as well as several "JD" initials are in the general areas where the original page 2 would have transferred the entries for the pet deposit and rent and parking fee and "JD" initials (with the current page 2 entries showing "200", "50" and "30"). Indentations from what appears to be a paper clip were also found on pages 1 and 3 but not on the current page 2. Additionally, the reaction under infrared light to the ink pen data entries is different on the current page 2 to that of the reaction of the ink pen data entries on pages 1 and 3, indicating a different pen was used for those entries. No conclusive evidence of alteration was noted to any of the data entries found on pages 1 and 3.
YLE7XE	It is the conclusion of this examiner that the Item 1, three page document set is not as it was initially written. Page two has been substituted with the following notable changes from what had been written. The dollar amount fields in sections 7 and 8 have been changed from "100", "25" and "20", to "200", "50" and "30". Also, the person who wrote the "JD" initials on page two is not the same writer that wrote the "JD" initials on pages one and three. Furthermore, two different ball point ink pens were used on pages one and three, and a third ball point pen was used on page two. The changes to the dollar amounts was found by use of the Electrostatic Detection Apparatus, ESDA, which visualizes paper fiber disturbances, particularly those created when one sheet of paper is written on while on top of another

## TABLE 3

WebCode	Conclusions
	<p>piece of paper which receives the indentations or fiber disturbances. These fiber disturbances are typically not visible to the unaided eye. The differences in writers was found by side by side visual comparisons of the handwritten "JD" fields. The differences in inks was found by stereomicroscopic observations, and controlled light examinations utilizing narrow portions of the visual and infrared spectrum. A video spectral comparator was used to conduct the controlled light examinations. Regarding the claim of alteration to utilities, and to overall rent, faint dollar amounts of 1200 and 40 were found in the visualized impressions on page three, and correspond to those dollar amounts found on page one. It is noted that other dollar amounts from page one were found in the visualized impressions on the face of page three.</p>
YZVDMY	<p>The ink of the handwritten text of the ballpoint pen on the second page differs from the handwritten text on first and third pages by its structure. Under the infrared luminescence lights, the handwritten text on the second page doesn't have luminescence, at the same time handwritten text on the first and third pages has luminescence. Under the infrared reflect lights, the handwritten text on the second page is visible, at the same time handwritten text on the first and third pages it disappears.</p>
Z6GQ2R	<p>The manuscript texts that have the second sheet of the submitted documentation, have been made with a different tool than the first and last sheets, due to the different reaction of their inks.</p>
Z89MPL	<p>When submitting the questioned agreement to the method of alteration of Documents it is detected that it was modified in sheet two.</p>
ZBQXPC	<p>Based on the findings mentioned above, page two of the lease agreement was altered.</p>
ZLPH6H	<p>Indented writing, physical, and alternate light source examinations were conducted and it was determined that Item 1 (Item Q1) has been altered with the removal and replacement of an inserted page 2. Analysis of the indented writing observed on Item 1 (Item Q1) page 3 shows that the numerical portions of the submitted page 2 are different from the numerical portions indented on to page 3 (listed below): Section 7 PETS: Submitted page reads "An additional deposit in the amount of \$ 200 shall be required along with additional monthly rent of \$ 50 ...". Indented writing in the corresponding portions observed on page 3 read as \$ 100 and \$ 25 respectively. Section 8 PARKING: Submitted page reads "A monthly parking fee of \$ 30 ...". Indented writing in the corresponding portion observed on page 3 reads as \$ 20. Additionally, the handwritten "JD" portions on the submitted Item 1 (Item Q1) page 2 do not overlay with the corresponding "JD" portions observed in the indentations on page 3. Furthermore, paperclip binding marks were observed on Item 1 (Item Q1) pages 1 and 3. These marks were not observed on page 2. In addition, alternate light source examinations of Item 1 (Item Q1) reveal that the handwriting on pages 1 and 3 optically reacts differently under infrared light than the handwriting on page 2. There are no observable physical or optical indications that the numerical entry fee of \$ "40" in Section 5 UTILITIES or any other entries on pages 1 and 3 have been altered. Lifts of the indented writing that was observed on Item 1 (Item Q1) page 3 using side light and the Electrostatic Detection Apparatus (ESDA)® are considered secondary evidence and have been designated as Item 2. No other indented writing of value was observed. Additional assessments and observations have been made regarding the submitted item and are recorded for possible future comparison.</p>
ZQK9BU	<p>The document referring to a contract of leasing composed of three sheets if it presents documentary alteration (WAS ALTERED).</p>
ZRFWR4	<p>The results of the investigations show that the agreement was altered. There were no limitations to the investigation. Our expert opinion is that the agreement was altered.</p>

# Additional Comments

TABLE 4

WebCode	Additional Comments
2MFZKP	All examinations conducted were non-destructive. Chemical formula assessments of the ink in the handwritten entries on pages 1-3 might provide additional information regarding the similarities and differences of inks involved.
2N9MNN	Good test.
3DQU3B	1. The second page have been replaced subsequent to the original execution of the questioned document. 2. An ink differentiation of ball-point pen on the second page, prove a second writing instrument. 3. Indented writing or marks on third page, not be in agreement with what appears on the second page of the document.
3DUAL4	If a handwriting comparison is needed, please submit fifteen to twenty known writing samples from both writers. If a suspected printer is located, the entire machine including power cords and/or known samples should be submitted for examination and comparison.
4N62N4	No evidence was located to suggest the Utilities fees on page 1 had been altered.
4N69HJ	Regarding the claims that the utilities and rent might have been altered, no evidence can confirm that allegation. Regarding the claims that the pet deposit and parking fee might have been altered, there is evidence to support page 2 was not attached to page 3 at the time it was filled out. Based on the handwriting alone, there is not enough evidence to support a conclusion of the document being altered.
6CKRYY	Analysis physical papers and inks, verifying the kind and quality of used printing, style and size of letters, shades of papers and inks the printing and hand signs, interline spacing (between line and line), interverbals (between word and word) and interliterals (between lyric and lyric) and possible case perfect between text and printed logos, to show provenance morphotypic, visible with optical elements of high gains and viewbox.
72J7MA	Assuming the printed content of the original (replaced) page is the same as the examined page 2 of Rental Agreement, the following handwritten values were changed: in paragraph 7, additional deposit was "100" and additional monthly rent was "25", and in paragraph 8 the parking fee was "20".
7EQ7AM	The second page of the questioned " Rental agreement" was removed and exchanged with the current page being examined , which resulted in the handwriting of the two letters (JD) being Different, thus the ink used in the writing.
7UG738	Sheet No. 2 was replaced, since it does not correspond to the same ink with sheets 1 and 3, the quantities of the replaced sheet are greater as mentioned by Mr. James Dunn
97BUH8	Microscopic examination of the handwritten signature initials "JD" on pages 1-3 of the agreement Q1 revealed that the writing movement and relative proportion of the "JD" on page 1 agreed with those on page 3, but were different from those on page 2. The difference in characteristic writing features indicated that the signature initials "JD" on page 2 and those on pages 1 and 3 were written by differnt persons. The finding was consistent with the original page 2 of Q1 being substituted with the existing one.
9AC6HV	Further handwriting examinations could be conducted, if handwriting samples from both parties are obtained.
9MG9QP	Testing of Q page 1 "Utilities Fee" figure did not reveal ink differentiation or signs of erasure that may indicate alteration of that entry.
AA6B88	It cannot be determined at what time-frame page 2 of Item Q1 was added/substituted after the production time of pages 1 and 3. An additional examination of the 'JD' initials on page 2 may be worthwhile, particularly if comparable specimen writing samples of the suspect and additional comparable specimen samples of the complainant can be obtained. However the examination may be limited due to the quality and complexity of the writing.
B2AR74	The alteration(s) to Exhibits 1 (pp1-3) was created by removing the original page 2 (not submitted) from the 3-page agreement and the substitution of a new page 2 which modified the resident's costs/fees. (Note: The "deposit" fee listed on page 2 of the original rental agreement (not submitted) listed the fee as "\$100" whereas the fee for the pet "deposit" on Exhibit 1 (p2) lists the fee as "\$200". In addition, the

## TABLE 4

WebCode	Additional Comments
	monthly rent on the original page 2 (not submitted) was listed at "\$25" whereas the monthly rent listed on Exhibit 1(p2) lists the rate at "\$50" per month.)
BGJNF6	Although the tenant claims the terms of the agreement for utilities, pet deposit and rent, and parking fees are higher than the terms of the agreement he originally signed, there is no evidence of erasure, bleaching, white out or other obliterations that I could find. The fees for pets and parking are found on page two, the page which appears to have been substituted, and thus the figures for those items may have been changed. The fees for rent and utilities on page one appear to be consistent in ink with all entries on pages one and three, including the signatures.
BJNDHD	If Mr. Dunn locates his copy of the lease and would like to have further forensic services, please let me know.
D2T2TK	The amounts on page 2, paragraph 7, has been modified from a deposit of 100\$ and a monthly fee of 25\$ to a deposit of 200\$ and a monthly fee of 50\$. Plus, on paragraph 8, a parking fee of 20\$ has been replaced by a parking fee of 30\$.
DA8JFF	Most probably the second page of the agreement was replaced.
EMCYYQ	If the printed text is not altered then the initial content of point 7 was "PETS: RESIDENT may keep one cat or one dog on the premises upon obtaining written consent of the OWNER. An additional deposit in the amount of \$100 shall be required along with additional monthly rent of \$25 along with the signing of OWNER'S Pet Agreement. JD". If the printed text is not altered then the initial content of the last sentence of point 8 was "A monthly parking fee of \$20 shall be required at the time of rent payment. JD"
EZKTGV	The assertion by the submitter was that alterations were made to various sections of the lease, including the "Utilities" section on Page One. No alterations were observed on Page One. The other assertions of the submitter were related to elements on Page Two, which is the substituted page.
F3Y7JD	While there is enough evidence to support that item Q1 has been altered in some capacity, the evidence does not support all of the alteration claims in the test scenario (specifically in regards to the utilities).
F8KARZ	The initials look dodgy as well but a signature comparison wasn't conducted with this being a QD proficiency test.
FCQ9Z6	Handwriting examination wasn't performed due to lack of time.
GBAFE2	1. The "Lease Agreement" issued by "Pinecrest Village Condominiums" in the name of C. JAMES DUNN, which presents a manuscript filled in black ink, when subjected to infrared with RG695 nanometers shows transparency on the pages 1 and 3 differences from record 2 showing total absorption; Similarly, when applying fluorescence with RG725 nanometers, page 1 and 3 show luminescence and page 2 shows total absorption. 2. The lease contract issued by "Pinecrest Village Condominiums" in the name of C. JAMES DUNN, the groove revelation method was applied by the ESDA 2 team, resulting in the following: Sheet number 2 DOES NOT PRESENT REVEALED, that is, it lacks the furrows of the first page, which is unusual since sheet number 3 presents the grooves corresponding to the previous pages, these being sheets 1 and 2. Sheet number 3 IF PRESENTED REVEALED showing rows corresponding to the first and second page that was before they replaced it with the current one, where the legends "25" and "100" stand out since they are digits different from those located in the current record 2. 3. The comparative study of the completed manuscripts corresponding to the "JD" legends located in the Lease Contract issued as by "Pinecrest Village Condominiums" in the name of C. JAMES DUNN, in which the legends "JD" reflected in page 2 of said contract with respect to the legends "JD" located on pages 1 and 3, ARE OF A DIFFERENT GRAPHIC ORIGIN. Said the above is that it is determined that the Lease Contract PRESENTS ALTERATION since page 2 was replaced by an outside one
H8H9F9	If examination of the initials written on Q1a, Q1b, and/or Q1c with the intention of determining authorship is required, a sufficient quantity of known specimen initials written as "JD" from any possible suspect(s) and/or victim(s) must be submitted.
HDXBC	During the analysis, clips marks were detected on sheets 1 and 3, as well as numbers, letters and chemical waste marks on sheet 3. Regarding sheet 2 this does not correspond to the original lease agreement

TABLE 4

WebCode	Additional Comments
JMGYCM	If a handwriting comparison is needed, please submit fifteen to twenty exact-text and/or normal-course-of-business known writing samples of the subject(s) and/or victim(s). Exhibits Q1(1)a, Q1(1)b, Q1(2)a, Q1(2)b, Q1(3)a, Q1(3)b and the original ESDA indentation lifts will be returned to the submitting agency.
JVYAPN	In the initials "JD" on the second page, features that might be characteristic of left-handedness (strokes directions) were found. Such features were not noted in the initials "JD" on the first nor third page.
JXYF6U	The EDD lifts in Item Q1A are considered secondary evidence and will be returned with the submitted items. Images of Q1 and Q1A have been retained. Only non-destructive ink examinations were conducted. If chemical analysis is requested of the inks, the evidence may be sent to a laboratory that conducts destructive ink examinations. The handwriting in Q1 is suitable for comparison if known writing from subjects of interest to the investigation is submitted. Please resubmit Q1 if the writing becomes of interest and contact us prior to the collection of known writing.
K2778A	It is not possible to know what information was found on the second page.
KBGYP9	MOST LIKELY SHEET TWO WAS REPLACED
ML82RC	"Explainable" indentations are those indentations wherein their source can be determined. For example, indentations found on the front of page 2 are easily recognized as coming from the writing on page 1. "Unexplainable" indentations are those indentations wherein their source cannot be determined.
MMVEAU	There is a question to be raised as to why page two is a copy and page 1 and 3 are originals. Understandably, clerical issues could happen in the work setting although this does not mean there were automatic alterations being made. It raises a few other questions as well, is that indeed his initials on page two? Who put the numbers in? Do we have handwriting for comparison we can do on that as well?
MXK2N6	This nine-level scale is used for evaluative reporting at the [Laboratory]. The likelihood ratio (LR) i.e. how much the results speak for or against the main hypothesis, is assessed. The magnitude of the LR determines the level of conclusion. If either the main or alternative hypothesis can be excluded, the scale is not used and the conclusion is a statement of fact.
MYL8GA	1. In the sheet number two it is determined that it was replaced, since when analyzed the inks are different to the 1 and 3, besides that the quantities of the replaced sheet are bigger, as mentioned by Mr. James Dunn. 2. When the documents were submitted to the ESDA it was revealed that in the third sheet there are ruts of the sheet, in which the amounts of sheet two do not correspond. In the point 7 of the deposit it is appraised a 25 and in the deposit a 100. In the point 8 of parking one was a 20, these do not correspond with the amounts of the sheet number 2
PBVLX9	The submission of known initial and signature standards may assist in determining who authored the questioned entries. The standards should be written to dictation, using a ball point pen on like blank lease agreement forms, fully duplicating all of the questioned material verbatim. The standards should also include known course of business samples. Possible sources of business samples include cancelled checks and other bank related documents, letters and diaries, employment and education related documents, tax forms, medical forms as well as prison/police/inmate/court related documents. Machine copies are acceptable as known standards. Any subsequent submissions made on this case should include all previously submitted items.
RKVH4	In general terms the lease is in good condition, the sizing does not present signs, traces or signs of manipulation made by chemical or mechanical means. The three pages of the lease agreement, presents laser printing, with font style and similar size. In the support of folios 1 and 3 in its upper left lateral zone, it shows physical traces different from those seen in the same area of folio 2. The contract was completed with two types of inks: Use of a doughy black ink, dark tonality, to capture the data that appear on page 2 (paragraphs 7 to 14). Use of a black ink, gray tonality, to capture the data completed on pages 1 (paragraphs 1 to 6) and page 3 (paragraphs 15 to 23, dates and signatures).
RUCTMR	Submission of two types of additional known writing samples by James Dunn could enhance a subsequent examination of this case and may result in a more conclusive opinion. These samples are: Requested - These samples should be taken on twenty (20) to thirty (30) sheets of paper, duplicating the questioned document(s) in size, shape, and format. The initials "JD" found on the questioned

TABLE 4

WebCode	Additional Comments
	document(s) should be written verbatim, at the dictation of the investigating officer. Do not allow the writer to see the questioned writing prior to producing the samples, and remove each exemplar from view after it is written. Collected - Provable samples where the writer wrote his initials "JD", that were produced in the past during the course of the subject's normal daily affairs, such as legitimate mortgage documents, job applications, court records, etc. These samples help verify that the writing samples taken at the request of the investigating officer are normally written. These samples also offer a broader range of an individual's writing for examination and should encompass the same time period as the questioned document. In the event the suspect refuses to provide writing exemplars, the investigating officer should contact the Questioned Document Unit for information on how to obtain compelled writing exemplars.
T7XCV3	CONSISTING OF THE HIGH PROBABILITY OF SUBTRACTION AND CHANGE OF SHEET TWO.
T8RZBC	My organisation does not have standard wording for conclusions for this type of (non-secure) document.
U3GHFG	Notwithstanding the simplistic nature of the initials on all of the pages, the initials on page 2 were observed to be slightly different from those written on pages 1 and 3, should specimen initials of the purported writer become available they could be submitted for examination and comparison purposes.
UPEQYH	ESDA examination on page 3 revealed indented writing from an unknown source. The deciphered indented writing read as follows : 100, 25, #6854, 20 and eight JD (initials). The figures 100, 25 and 20 were different from the figures on page 2. The entries #6854 and the eight JD (initials) were also different from the entries on page 2.
V2X3DY	According to the above, it can be deduced that the current sheet # 2 of the questioned document was added after the removal of a previous sheet.
VDMFFK	Further chemical analysis of the ink may provide additional evidence.
VGWWX7	The examination of the handwritten elements of the contract by a forensic handwriting expert could determine whether the form was fulfilled by one or more individuals.
W2CQEQ	Examinations of the paper, inks and printing processes on Pages 1 through 3 is limited. If a more conclusive opinion is required, destructive chemical testing will be necessary. This laboratory does not conduct destructive testing and a laboratory that does so will need to be contacted by the client.
W9CBE2	Similarly, I want to state that upon examination of the three pages found differences between pages one and three with the second page. specifically in page number one was found different reaction in the lines with letters "JD" with 715 nanometers in comparison with the page number two. In other wise the page number three had the same reaction in the lines with letters "JD" with 715 nanometers as the page number one.
WBWNQZ	The second sheet of the questioned document: Belongs to a group of sheets different from the one used for sheets 1 and 3. Presents no deformation of the paper as shown by sheets 1 and 3 per clip hook. Was written with a different ink to the one used in the writings and signatures of sheets 1 and 3. Shows divergences of the signs "JD" compared to those shown in sheets 1 and 3. is not part of the document of which sheets 1 and 3 are part.
WNELMN	The folio two (2) was replaced and the scriptural fullness obeys another type of ink used.
WWL8JN	The behaviour of the ink under a wavelength of 630nm on pages 1 and 3 differs from that on page 2
YDHHUV	The ink employed to write on sheet #2 of the contract is different from the ink on sheets #1 and #3. The groove revealing on sheet#3 matches the spaces on sheet #2, and shows grooves with different amounts
YKKJH6	The staple was removed in order to perform the Electrostatic Detection Apparatus examination of the pages. Images taken of the stapled document prior to removal. Simplistic nature of the initials on page 2 preclude a comparative handwriting examination of the initials to those found on pages 1 and 3.
YZVDMY	Second page of the questioned document is altered.

-End of Report-  
(Appendix may follow)

## Test No. 19-521: Questioned Documents Examination

DATA MUST BE SUBMITTED BY **April 29, 2019, 11:59 p.m.** TO BE INCLUDED IN THE REPORT

Participant Code: U1234A

WebCode: TM99X2

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 resident in a rental community has accused his management company of changing the terms of his lease after it had been signed. Following a review of his monthly charges, renter James Dunn states that his fees are higher than those he agreed to at the time of lease agreement. Specifically, he claims that his utilities, pet deposit and rent, and parking fee are higher than the agreed upon amounts. Mr. Dunn is unable to locate his copy of the agreement, but agent Samantha Haan from the leasing office, who oversaw its completion, has provided the purported original lease. Mr. Dunn states that his signature on page 3 appears to be genuine. Please examine the lease agreement to determine if there are any signs of alteration following its completion.

### Items Submitted (Sample Pack QD):

Item Q1: Three page lease agreement for Pinecrest Village Apartments.

### **1.) Based on the findings of your examination, to what degree can it be confirmed or refuted that the lease agreement was 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 agreement WAS ALTERED.
- B. The questioned agreement WAS PROBABLY ALTERED.
- C. CANNOT DETERMINE whether or not the questioned agreement was altered.
- D. The questioned agreement WAS PROBABLY NOT ALTERED.
- E. The questioned agreement WAS NOT 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.

***Please note:** Any additional formatting applied in the free form space below will not transfer to the Summary Report and may cause your information to be illegible. This includes additional spacing and returns that present your responses in lists and tabular formats.*

*Please note: Any additional formatting applied in the free form space below will not transfer to the Summary Report and may cause your information to be illegible. This includes additional spacing and returns that present your responses in lists and tabular formats.*

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

**4.) Additional Comments**

## 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 ASCLD/LAB, 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 ASCLD/LAB, ANAB, and/or A2LA. (Accreditation Release section below must be completed.)
- This participant's data is **not** intended for submission to ASCLD/LAB, 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.   
(Include ASCLD/LAB Certificate here)

A2LA Certificate No.

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

Authorized Contact Person and Title

Laboratory Name

Location (City/State)