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FORENSIC TESTING PROGRAM

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Bloodstain Pattern Analysis
Test No. 25-5601/5 Summary Report

Each participant received a sample pack containing either printed photographs (5601) or digital images (5605) of bloodstains for Angle of Impact Determination and Pattern Description, where they were asked to analyze these items and report their findings. Data were returned from 178 participants: 51 for 25-5601 and 127 for 25-5605 and are compiled into the following tables:

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

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

Manufacturer's Information

Each sample pack contained photos in either a physically printed format or as a digitally downloadable file. Images were intended for angle of impact determinations, and pattern recognition and description analyses. Participants were asked to determine the angle of impact of Stains A - E (Item 1), identify the pattern for Items 2 - 4, and identify and write a brief description of the pattern(s) for Item 5.

SAMPLE PREPARATION: Images were assembled onto test templates prior to physical printing.

SAMPLE PACK ASSEMBLY: Once verification was complete, each photo set was placed into a pre-labeled sample pack envelope, sealed, and initialed. A zipped file containing the digitally downloadable media was uploaded to the CTS Portal.

VERIFICATION: Predistribution results were consistent with each other and the manufacturer's preparation information.

ANGLE OF IMPACT DETERMINATION

Item 1: For each angle of impact stain, human whole blood was released from a pipette at a height of approximately thirty-six inches above the impact surface. White poster board targets were placed on an inclined plane at the following predetermined angles from the vertical:

Stain	Preparation Angle
A	26°
B	32°
C	38°
D	21°
E	14°

Please note that the preparation angle is the value used at the test preparation phase and may not necessarily represent the final angle of the drops. It is advised to wait for the Grand Mean statistics available in the Summary and Individual Reports before evaluating performance.

Manufacturer's Information, continued

PATTERN DESCRIPTION

Item 2: Approximately 5 mL of blood was deposited using a pipette onto a horizontal target containing men's undergarments. The blood was allowed to absorb naturally.

Item 3: Using a pipette, approximately 1 mL of blood was deposited onto the corner of the horizontal target. The blood was allowed 5 minutes and 40 seconds to dry. A dry flip flop was then moved through the blood by hand and across the target towards the upper left corner.

Item 4: A dropper was utilized to deposit 1 mL of blood onto a horizontal target. A second dropper was filled with water and held approximately 36 inches above the target. Ten drops of water were released into the blood.

Item 5: A hand was placed on a vertical target. Blood was mixed with saliva and was sprayed over the hand using compressed air. The hand remained in position for approximately 45 seconds before being dragged down to the left as it was removed from the target.

Summary Comments

This test was designed to allow participants to assess their proficiency in the Angle of Impact Determination and Pattern Description. Participants had the option of receiving the stains and patterns for examination in the form of either printed photographs or digital images. Refer to the Manufacturer's Information for detailed explanations of how the angles and patterns were created.

Angle of Impact

For angle of impact determination, participants were provided with images of five impact stains prepared at known angles from the vertical (see table below). Participants were asked to report the Length, Width, and Angle of the stain. Using the provided length and width measurements, CTS also generated a Calculated Angle of Impact (CalcAng). Results marked with an "X" in Table 1 are greater than or equal to ±3 standard deviations (STD) from the grand mean (GM). These results have been excluded from the statistical calculations presented at the end of each Stain table. Each exclusion was determined independently of other values (i.e. Length exclusion based only on Length GM; CalcAng exclusion based only on CalcAng GM). For some participants, significantly discrepant length/width measurements provided for magnified drops were excluded from calculations while their angle was not; this is due to an appropriate length/width ratio being achieved resulting in an angle value within the ±3 STD range. A total of 18 participants were excluded from the reported angle or the calculated angle statistics. Of those, 16 were excluded from both sets of statistics. The Grand Mean and Standard Deviation are shown below, based on each Calculated Angle.

		Calculated Angle	
Stain	Preparation Angle	Grand Mean	Standard Deviation
A	26°	25.05°	2.20
B	32°	30.71°	1.11
C	38°	33.57°	2.12
D	21°	21.12°	1.49
E	14°	15.25°	1.19

Pattern Description

The pattern description section was divided into two separate parts. The first part of the pattern description section consisted of single pattern targets and participants were asked to select the pattern type(s) that best described the pattern contained in the image. The second part of the pattern description section consisted of one target, and participants were asked to select the pattern types that best described the patterns contained in the image and provide a detailed description of the possible bloodstain patterns or events that created the final result.

In Table 2, part one, Item 2, all of the participants reported “Saturation Stain.” For Item 3, 98.9% of participants reported “Wipe.” For Item 4, 96.6% of participants reported “Drip Pattern.”

In Table 3, part two, Item 5, the majority of participants reported the following distinct pattern mechanisms and characteristics: 1) Wipe, 2) Expiration Pattern, and 3) Void.

Angle of Impact Determination

TABLE 1

Table Explanation

The following table presents participants' reported Width and Length measurements for each bloodstain (A-E), along with Angle of Impact calculations. Several comparison statistics computed by CTS are presented as well. A brief explanation of each appears below:

CalcAng - Calculated Angle of Impact: This value was calculated by CTS using the width and length of the bloodstain reported by the participant and the formula: $\sin \theta$ = width/length, where θ is the angle of impact. This calculation can only be performed when the reported width is less than or equal to the reported length.

Diff - Difference: The numerical difference between the participant's measurement and the Grand Mean.

GM - Grand Mean: The average of the measurements submitted by all the participants, not including any data specifically excluded (marked with X).

SD - Between Participant Standard Deviation : For each measurement, the standard deviation of the participant data about the Grand Mean, not including those participants excluded from the Grand Mean. The Between Participant Standard Deviation is an indication of the precision of measurement between participants.

CPV - Comparative Performance Value: For each value not excluded from statistical calculations, the CPV is the *Difference* divided by the *Between Participant Standard Deviation*. The *Difference* and *Between Participant Standard Deviation* values given below are rounded values, and as such, there may be a slight variation between the CPV provided in the chart and a CPV calculated by hand with the rounded values. The CPV is an indication of how well a participant's measurement agrees with the measurements submitted by other participants. The CPV is a (unitless) ratio indicating the number of standard deviations a participant's results are from the Grand Mean. The closer a participant's CPV is to zero, the more consistent their results are with the other participants' data. The CPV is a specific type of Z-score.

When a participant reports data that gives a CPV above 3.00 or below -3.00 the result is "flagged" ("X"). The use of this criterion is well accepted as a performance indicator and ensures in excess of 99% confidence that flagged results are different from the other participants'.

TABLE 1

Stain A - Preparation Angle: 26°

WebCode-Test	Width			Length			Angle			CalcAng
	mm*	Diff	CPV	mm*	Diff	CPV	Deg.	Diff	CPV	
37ZJPV-5605	2.05	0.23	2.04	5.06	0.73	2.58	23.90	-1.14	-0.52	23.90
39NDLJ-5605	1.60	-0.22	-1.98	4.60	0.27	0.95	20.35	-4.69	-2.16	20.35
3WDMLA-5605	1.80	-0.02	-0.19	4.60	0.27	0.95	23.00	-2.04	-0.94	23.04
3ZYPQG-5605	1.70	-0.12	-1.09	3.90	-0.43	-1.54	25.80	0.76	0.35	25.84
43EXDZ-5605	1.80	-0.02	-0.19	4.30	-0.03	-0.12	24.74	-0.30	-0.14	24.75
47HU2A-5605	1.80	-0.02	-0.19	4.30	-0.03	-0.12	24.60	-0.44	-0.20	24.75
4JLDEU-5605	0.86	-0.96	-8.60 X	1.93	-2.40	-8.53 X	26.50	1.46	0.67	26.46
4LCEHW-5601	1.80	-0.02	-0.19	4.70	0.37	1.31	22.52	-2.52	-1.16	22.52
63CQQX-5605	1.80	-0.02	-0.19	4.00	-0.33	-1.18	27.00	1.96	0.90	26.74
644UBT-5605	1.80	-0.02	-0.19	4.20	-0.13	-0.47	25.00	-0.04	-0.02	25.38
664MD8-5601	1.81	-0.01	-0.10	4.19	-0.14	-0.51	25.59	0.55	0.25	25.59
67B7WZ-5605	1.80	-0.02	-0.19	4.26	-0.07	-0.26	25.00	-0.04	-0.02	24.99
6AAHTZ-5601	1.90	0.08	0.70	5.00	0.67	2.37	22.30	-2.74	-1.26	22.33
6MXKEY-5601	1.80	-0.02	-0.19	3.90	-0.43	-1.54	27.49	2.45	1.13	27.49
6RPRT2-5605	1.40	-0.42	-3.77 X	3.50	-0.83	-2.96	23.60	-1.44	-0.66	23.58
6RU9RZ-5605	26.44	24.62	220.1 X	64.40	60.07	213.4 X	24.24	-0.80	-0.37	24.24
6U2N6X-5605	1.80	-0.02	-0.19	4.60	0.27	0.95	23.00	-2.04	-0.94	23.04
6YUNJT-5605	1.80	-0.02	-0.19	4.20	-0.13	-0.47	25.00	-0.04	-0.02	25.38
7D4YHY-5605	1.80	-0.02	-0.19	4.40	0.07	0.24	24.00	-1.04	-0.48	24.15
7PJLXR-5601	1.80	-0.02	-0.19	4.20	-0.13	-0.47	25.38	0.34	0.16	25.38

TABLE 1

Stain A - Preparation Angle: 26°, continued

WebCode-Test	Width			Length			Angle			CalcAng
	mm*	Diff	CPV	mm*	Diff	CPV	Deg.	Diff	CPV	
7TJ4PR-5601	1.50	-0.32	-2.88	4.00	-0.33	-1.18	22.02	-3.02	-1.39	22.02
7UEFT9-5605	1.70	-0.12	-1.09	4.40	0.07	0.24	22.90	-2.14	-0.98	22.73
83LJBQ-5605	1.66	-0.16	-1.45	3.52	-0.81	-2.89	28.00	2.96	1.36	28.14
89VTLT-5605	1.80	-0.02	-0.19	4.10	-0.23	-0.83	26.00	0.96	0.44	26.04
9BDCZW-5605	1.80	-0.02	-0.19	4.50	0.17	0.60	23.60	-1.44	-0.66	23.58
9HCYW3-5601	1.94	0.12	1.06	4.30	-0.03	-0.12	26.82	1.78	0.82	26.82
9JNDLW-5605	1.80	-0.02	-0.19	4.40	0.07	0.24	24.00	-1.04	-0.48	24.15
9LBAR3-5601	1.73	-0.09	-0.82	4.31	-0.02	-0.08	24.00	-1.04	-0.48	23.67
9XNDDZ-5605	2.00	0.18	1.59	4.25	-0.08	-0.29	28.07	3.03	1.39	28.07
9YXGP3-5605	1.90	0.08	0.70	4.60	0.27	0.95	24.00	-1.04	-0.48	24.40
A4QQQN-5605	1.33	-0.49	-4.40 X	2.84	-1.49	-5.30 X	27.90	2.86	1.31	27.92
AF2CXN-5601	1.90	0.08	0.70	4.20	-0.13	-0.47	26.90	1.86	0.85	26.90
AXL3WM-5605	1.80	-0.02	-0.19	4.43	0.10	0.35	23.90	-1.14	-0.52	23.97
AYFDRA-5605	1.80	-0.02	-0.19	4.50	0.17	0.60	23.60	-1.44	-0.66	23.58
AYXNMP-5605	1.39	-0.43	-3.86 X	3.75	-0.58	-2.07	38.00	12.96	5.96 X	21.76
B2KKTU-5605	2.00	0.18	1.59	5.00	0.67	2.37	23.60	-1.44	-0.66	23.58
B3DTHP-5605	2.50	0.68	6.07 X	4.50	0.17	0.60	34.00	8.96	4.12 X	33.75 X
B78MFQ-5605	1.80	-0.02	-0.19	4.40	0.07	0.24	24.00	-1.04	-0.48	24.15
BDQTCX-5605	1.80	-0.02	-0.19	4.60	0.27	0.95	23.00	-2.04	-0.94	23.04
BFJ8YA-5601	2.00	0.18	1.59	4.50	0.17	0.60	26.39	1.35	0.62	26.39

TABLE 1

Stain A - Preparation Angle: 26°, continued

WebCode-Test	Width			Length			Angle			CalcAng
	mm*	Diff	CPV	mm*	Diff	CPV	Deg.	Diff	CPV	
BFKGVT-5605	1.80	-0.02	-0.19	4.20	-0.13	-0.47	25.00	-0.04	-0.02	25.38
BNREEP-5605	1.79	-0.03	-0.28	4.80	0.47	1.66	21.90	-3.14	-1.44	21.90
BP6XFM-5605	1.33	-0.49	-4.40 X	2.84	-1.49	-5.30 X	27.90	2.86	1.31	27.92
C2W2ZR-5605	4.53	2.71	24.22 X	1.74	-2.59	-9.21 X	22.54	-2.50	-1.15	
C4L4BM-5605	2.21	0.39	3.47 X	5.28	0.95	3.37 X	24.70	-0.34	-0.16	24.74
C6W6UZ-5601	1.80	-0.02	-0.19	4.20	-0.13	-0.47	25.40	0.36	0.16	25.38
CJZALL-5605	1.79	-0.03	-0.28	4.33	0.00	-0.01	24.40	-0.64	-0.30	24.42
CMF4ZX-5601	1.80	-0.02	-0.19	4.50	0.17	0.60	23.60	-1.44	-0.66	23.58
CPZV8U-5605	2.00	0.18	1.59	4.00	-0.33	-1.18	30.00	4.96	2.28	30.00
CVP7LY-5605	1.78	-0.04	-0.37	4.29	-0.04	-0.15	24.50	-0.54	-0.25	24.51
CWXPZL-5605	1.60	-0.22	-1.98	3.00	-1.33	-4.73 X	32.00	6.96	3.20 X	32.23 X
D44ZB9-5605	1.90	0.08	0.70	4.50	0.17	0.60	25.00	-0.04	-0.02	24.97
DLXRW7-5605	1.80	-0.02	-0.19	4.20	-0.13	-0.47	25.00	-0.04	-0.02	25.38
DUTXP8-5605	2.00	0.18	1.59	4.00	-0.33	-1.18	30.00	4.96	2.28	30.00
DXBCHZ-5605	2.00	0.18	1.59	4.50	0.17	0.60	26.00	0.96	0.44	26.39
EBULCJ-5605	1.33	-0.49	-4.40 X	3.45	-0.88	-3.13 X	22.60	-2.44	-1.12	22.68
EC6G3H-5605	1.83	0.01	0.07	4.39	0.06	0.20	24.60	-0.44	-0.20	24.64
EFQZ8L-5605	1.89	0.07	0.61	3.93	-0.40	-1.43	28.70	3.66	1.68	28.75
EGMJAM-5605	1.50	-0.32	-2.88	4.00	-0.33	-1.18	22.00	-3.04	-1.40	22.02
EJ6MXK-5605	1.45	-0.37	-3.32 X	3.02	-1.31	-4.66 X	28.69	3.65	1.68	28.69

TABLE 1

Stain A - Preparation Angle: 26°, continued

WebCode-Test	Width			Length			Angle			CalcAng
	mm*	Diff	CPV	mm*	Diff	CPV	Deg.	Diff	CPV	
EZA8GU-5601	1.90	0.08	0.70	4.10	-0.23	-0.83	27.00	1.96	0.90	27.61
F7FYLK-5605	1.95	0.13	1.15	4.60	0.27	0.95	25.10	0.06	0.03	25.08
F8P9CW-5605	1.70	-0.12	-1.09	4.20	-0.13	-0.47	24.00	-1.04	-0.48	23.88
FAWNKN-5605	1.90	0.08	0.70	4.10	-0.23	-0.83	27.60	2.56	1.18	27.61
FVC9HN-5605	1.80	-0.02	-0.19	4.20	-0.13	-0.47	25.37	0.33	0.15	25.38
G22U6G-5601	1.80	-0.02	-0.19	4.50	0.17	0.60	23.60	-1.44	-0.66	23.58
GDWYGN-5605	1.90	0.08	0.70	4.40	0.07	0.24	25.60	0.56	0.26	25.58
GE699L-5605	1.90	0.08	0.70	4.00	-0.33	-1.18	28.00	2.96	1.36	28.36
H2FQTM-5601	1.74	-0.08	-0.73	4.40	0.07	0.24	23.29	-1.75	-0.81	23.29
H3VEP3-5605	1.80	-0.02	-0.19	4.10	-0.23	-0.83	26.00	0.96	0.44	26.04
H9BQ9E-5605	1.85	0.03	0.25	4.39	0.06	0.20	24.90	-0.14	-0.07	24.92
HFFF2F-5605	1.28	-0.54	-4.84 X	3.02	-1.31	-4.66 X	25.07	0.03	0.01	25.08
HGPF7M-5601	1.80	-0.02	-0.19	4.00	-0.33	-1.18	26.74	1.70	0.78	26.74
HJF6N3-5605	1.80	-0.02	-0.19	4.30	-0.03	-0.12	25.00	-0.04	-0.02	24.75
HKBMP4-5605	1.90	0.08	0.70	4.30	-0.03	-0.12	26.22	1.18	0.54	26.22
HYL3BQ-5601	1.90	0.08	0.70	4.00	-0.33	-1.18	28.40	3.36	1.54	28.36
JFEXMH-5605	1.80	-0.02	-0.19	4.30	-0.03	-0.12	24.40	-0.64	-0.30	24.75
JQDTKD-5605	1.80	-0.02	-0.19	4.40	0.07	0.24	24.10	-0.94	-0.43	24.15
JUC4GD-5605	1.91	0.09	0.79	4.43	0.10	0.35	25.54	0.50	0.23	25.54
JWYNLG-5605	1.50	-0.32	-2.88	4.50	0.17	0.60	19.50	-5.54	-2.55	19.47

TABLE 1

Stain A - Preparation Angle: 26°, continued

WebCode-Test	Width			Length			Angle			
	mm*	Diff	CPV	mm*	Diff	CPV	Deg.	Diff	CPV	*CalcAng*
K7GMQR-5605	1.80	-0.02	-0.19	4.40	0.07	0.24	24.00	-1.04	-0.48	24.15
K7GUND-5605	1.44	-0.38	-3.41 X	2.84	-1.49	-5.30 X	30.46	5.42	2.49	30.47
K8C6RT-5605	1.90	0.08	0.70	4.40	0.07	0.24	25.20	0.16	0.07	25.58
KLXKVT-5605	1.80	-0.02	-0.19	4.50	0.17	0.60	24.00	-1.04	-0.48	23.58
KPWWQR-5601	2.00	0.18	1.59	4.50	0.17	0.60	26.39	1.35	0.62	26.39
LAZY4M-5605	1.75	-0.07	-0.64	4.25	-0.08	-0.29	25.48	0.44	0.20	24.32
LKHFYF-5605	1.80	-0.02	-0.19	4.20	-0.13	-0.47	25.38	0.34	0.16	25.38
LKJYWX-5605	1.81	-0.01	-0.10	4.38	0.05	0.17	24.40	-0.64	-0.30	24.41
LLN6WH-5605	1.70	-0.12	-1.09	4.00	-0.33	-1.18	25.10	0.06	0.03	25.15
LTQCGR-5605	1.90	0.08	0.70	4.50	0.17	0.60	24.00	-1.04	-0.48	24.97
M3RY4H-5605	1.90	0.08	0.70	4.20	-0.13	-0.47	27.00	1.96	0.90	26.90
M6YCRB-5605	1.73	-0.09	-0.82	4.41	0.08	0.28	23.20	-1.84	-0.85	23.10
MNCWNE-5605	1.90	0.08	0.70	4.80	0.47	1.66	23.20	-1.84	-0.85	23.32
MTQJED-5605	2.00	0.18	1.59	4.00	-0.33	-1.18	30.00	4.96	2.28	30.00
N8JN4L-5601	1.72	-0.10	-0.91	4.20	-0.13	-0.47	24.17	-0.87	-0.40	24.17
N9DCMG-5605	1.80	-0.02	-0.19	4.30	-0.03	-0.12	24.75	-0.29	-0.13	24.75
NB4FBH-5601	1.60	-0.22	-1.98	4.80	0.47	1.66	19.47	-5.57	-2.56	19.47
NP2PYN-5605	1.80	-0.02	-0.19	4.30	-0.03	-0.12	25.00	-0.04	-0.02	24.75
NT2TQB-5605	0.95	-0.87	-7.79 X	2.23	-2.10	-7.47 X	25.20	0.16	0.07	25.21
P82WTF-5605	1.80	-0.02	-0.19	4.10	-0.23	-0.83	26.04	1.00	0.46	26.04

TABLE 1

Stain A - Preparation Angle: 26°, continued

WebCode-Test	Width			Length			Angle			CalcAng
	mm*	Diff	CPV	mm*	Diff	CPV	Deg.	Diff	CPV	
PB2NWU-5605	1.70	-0.12	-1.09	4.20	-0.13	-0.47	24.00	-1.04	-0.48	23.88
PF8YRL-5601	1.66	-0.16	-1.45	4.50	0.17	0.60	22.00	-3.04	-1.40	21.65
PFWHUV-5605	1.67	-0.15	-1.36	4.01	-0.32	-1.15	24.60	-0.44	-0.20	24.61
PPU3UE-5605	2.00	0.18	1.59	4.80	0.47	1.66	24.00	-1.04	-0.48	24.62
PTGXXU-5605	1.80	-0.02	-0.19	4.70	0.37	1.31	23.00	-2.04	-0.94	22.52
Q9NVJJ-5605	2.00	0.18	1.59	4.00	-0.33	-1.18	30.00	4.96	2.28	30.00
QA3HV7-5605	1.85	0.03	0.25	4.27	-0.06	-0.22	25.70	0.66	0.30	25.67
QAM2ZD-5605	1.93	0.11	0.97	4.44	0.11	0.38	25.80	0.76	0.35	25.77
QEFL2V-5605	2.00	0.18	1.59	4.00	-0.33	-1.18	30.00	4.96	2.28	30.00
QM9BMJ-5601	2.10	0.28	2.49	4.40	0.07	0.24	28.50	3.46	1.59	28.51
QQ9LJJ-5601	2.00	0.18	1.59	4.00	-0.33	-1.18	30.00	4.96	2.28	30.00
QRKJQ9-5605	1.80	-0.02	-0.19	4.50	0.17	0.60	24.00	-1.04	-0.48	23.58
RNDKU7-5605	45.90	44.08	394.1X	108.30	103.97	369.3X	25.10	0.06	0.03	25.08
RQ4LXA-5605	1.80	-0.02	-0.19	4.30	-0.03	-0.12	24.75	-0.29	-0.13	24.75
RRY6ZB-5605	1.80	-0.02	-0.19	4.90	0.57	2.02	21.55	-3.49	-1.61	21.55
RTR2MJ-5605	1.80	-0.02	-0.19	4.30	-0.03	-0.12	24.70	-0.34	-0.16	24.75
RU239H-5601	1.80	-0.02	-0.19	4.50	0.17	0.60	23.60	-1.44	-0.66	23.58
RXMUFE-5605	1.85	0.03	0.25	4.33	0.00	-0.01	25.00	-0.04	-0.02	25.29
RZ9UD9-5605	1.80	-0.02	-0.19	3.90	-0.43	-1.54	27.30	2.26	1.04	27.49
T3FWYR-5605	1.70	-0.12	-1.09	3.70	-0.63	-2.25	27.30	2.26	1.04	27.35

TABLE 1

Stain A - Preparation Angle: 26°, continued

WebCode-Test	Width			Length			Angle			CalcAng
	mm*	Diff	CPV	mm*	Diff	CPV	Deg.	Diff	CPV	
T3PKXB-5605	1.80	-0.02	-0.19	4.20	-0.13	-0.47	25.40	0.36	0.16	25.38
T3VUUG-5601	1.80	-0.02	-0.19	4.20	-0.13	-0.47	26.00	0.96	0.44	25.38
T7A7A7-5605	0.44	-1.38	-12.35 X	1.09	-3.24	-11.52 X	23.80	-1.24	-0.57	23.81
TG7HY6-5605	1.50	-0.32	-2.88	3.00	-1.33	-4.73 X	30.00	4.96	2.28	30.00
TJ3U3K-5605	1.80	-0.02	-0.19	4.50	0.17	0.60	23.60	-1.44	-0.66	23.58
U7NWTA-5605	1.80	-0.02	-0.19	4.50	0.17	0.60	23.50	-1.54	-0.71	23.58
UQBPE6-5601	2.00	0.18	1.59	4.60	0.27	0.95	25.80	0.76	0.35	25.77
VA9NJQ-5605	1.90	0.08	0.70	4.90	0.57	2.02	22.82	-2.22	-1.02	22.81
VBHCJA-5605	1.84	0.02	0.16	4.40	0.07	0.24	24.70	-0.34	-0.16	24.72
WLWPF4-5605	1.85	0.03	0.25	4.52	0.19	0.67	24.00	-1.04	-0.48	24.16
X67L9L-5605	1.81	-0.01	-0.10	4.54	0.21	0.74	24.00	-1.04	-0.48	23.50
X7DK38-5605	2.00	0.18	1.59	4.00	-0.33	-1.18	30.00	4.96	2.28	30.00
XEPFMG-5605	1.80	-0.02	-0.19	4.30	-0.03	-0.12	24.70	-0.34	-0.16	24.75
XRYFXZ-5605	1.28	-0.54	-4.84 X	3.12	-1.21	-4.31 X	24.20	-0.84	-0.39	24.22
Y4QPFM-5605	1.80	-0.02	-0.19	4.40	0.07	0.24	24.10	-0.94	-0.43	24.15
YFGZN7-5605	1.80	-0.02	-0.19	4.50	0.17	0.60	23.58	-1.46	-0.67	23.58
YKCPC6-5605	1.90	0.08	0.70	4.30	-0.03	-0.12	26.20	1.16	0.53	26.22
YKDKUB-5605	1.90	0.08	0.70	4.50	0.17	0.60	25.00	-0.04	-0.02	24.97
YUGWQ6-5605	1.82	0.00	-0.01	4.50	0.17	0.60	23.86	-1.18	-0.54	23.86
Z8ZN8Y-5605	1.67	-0.15	-1.36	4.50	0.17	0.60	21.78	-3.26	-1.50	21.78

TABLE 1

Stain A - Preparation Angle: 26°, continued

WebCode-Test	Width			Length			Angle			CalcAng
	mm*	Diff	CPV	mm*	Diff	CPV	Deg.	Diff	CPV	
ZB6A3C-5605	1.70	-0.12	-1.09	4.50	0.17	0.60	22.00	-3.04	-1.40	22.20
ZE6KU6-5605	1.80	-0.02	-0.19	5.00	0.67	2.37	21.10	-3.94	-1.81	21.10
ZQYUJZ-5605	3.40	1.58	14.11 X	8.40	4.07	14.45 X	23.90	-1.14	-0.52	23.88
ZRQEKK-5601	1.90	0.08	0.70	4.10	-0.23	-0.83	27.61	2.57	1.18	27.61
ZTM99A-5601	1.87	0.05	0.43	4.37	0.04	0.13	25.30	0.26	0.12	25.34

Summary Statistics for Stain A - Preparation Angle: 26°

	Width (mm*)	Length (mm*)	Angle°	CalcAng°
Grand Mean	1.82	4.33	25.04	25.05
Standard Deviation	0.11	0.28	2.18	2.20
Participants Included in calculations	127	128	142	142
Participants excluded from calculations (indicated by X)	18	17	3	2

**Statistical evaluation for length/width measurements includes those who did not report in mm, which may result in a higher number of participants excluded from these calculations. This difference in measurement unit has no effect on the statistical evaluation of the Angle° or CalcAng° data.*

TABLE 1

Stain B - Preparation Angle: 32°

WebCode-Test	Width			Length			Angle			CalcAng
	mm*	Diff	CPV	mm*	Diff	CPV	Deg.	Diff	CPV	
37ZJPV-5605	3.76	-1.49	-9.75 X	7.23	-3.02	-10.42X	31.30	0.56	0.48	31.34
39NDLJ-5605	4.80	-0.45	-2.94	10.20	-0.05	-0.17	28.07	-2.67	-2.32	28.07
3WDMLA-5605	5.30	0.05	0.34	10.30	0.05	0.17	31.00	0.26	0.22	30.97
3ZYPQG-5605	5.50	0.25	1.65	10.70	0.45	1.55	30.90	0.16	0.14	30.93
43EXDZ-5605	5.20	-0.05	-0.32	10.40	0.15	0.52	30.00	-0.74	-0.64	30.00
47HU2A-5605	5.30	0.05	0.34	10.40	0.15	0.52	30.70	-0.04	-0.04	30.64
4JLDEU-5605	2.63	-2.62	-17.16X	5.24	-5.01	-17.28X	30.10	-0.64	-0.56	30.13
4LCEHW-5601	5.30	0.05	0.34	10.40	0.15	0.52	30.74	0.00	0.00	30.64
63CQQX-5605	5.20	-0.05	-0.32	10.00	-0.25	-0.86	31.00	0.26	0.22	31.33
644UBT-5605	5.40	0.15	0.99	10.50	0.25	0.86	31.00	0.26	0.22	30.95
664MD8-5601	5.37	0.12	0.80	10.27	0.02	0.07	31.53	0.79	0.68	31.53
67B7WZ-5605	5.31	0.06	0.40	10.12	-0.13	-0.45	32.00	1.26	1.09	31.65
6AAHTZ-5601	5.20	-0.05	-0.32	10.90	0.65	2.24	28.50	-2.24	-1.94	28.49
6MXKEY-5601	5.20	-0.05	-0.32	10.00	-0.25	-0.86	31.33	0.59	0.51	31.33
6RPRT2-5605	4.40	-0.85	-5.56 X	8.30	-1.95	-6.73 X	32.00	1.26	1.09	32.01
6RU9RZ-5605	53.29	48.04	314.7X	106.33	96.08	331.3X	30.08	-0.66	-0.57	30.08
6U2N6X-5605	5.20	-0.05	-0.32	10.30	0.05	0.17	30.30	-0.44	-0.38	30.32
6YUNJT-5605	5.40	0.15	0.99	10.30	0.05	0.17	32.00	1.26	1.09	31.62
7D4YHY-5605	5.10	-0.15	-0.97	10.30	0.05	0.17	30.00	-0.74	-0.64	29.68
7PJLXR-5601	5.30	0.05	0.34	10.20	-0.05	-0.17	31.31	0.57	0.49	31.31

TABLE 1

Stain B - Preparation Angle: 32°, continued

WebCode-Test	Width			Length			Angle			CalcAng
	mm*	Diff	CPV	mm*	Diff	CPV	Deg.	Diff	CPV	
7TJ4PR-5601	5.30	0.05	0.34	10.20	-0.05	-0.17	31.30	0.56	0.48	31.31
7UEFT9-5605	5.40	0.15	0.99	10.60	0.35	1.21	30.90	0.16	0.14	30.63
83LJBQ-5605	4.36	-0.89	-5.82 X	8.61	-1.64	-5.66 X	30.00	-0.74	-0.64	30.42
89VTLT-5605	5.10	-0.15	-0.97	10.00	-0.25	-0.86	30.60	-0.14	-0.12	30.66
9BDCZW-5605	5.30	0.05	0.34	10.30	0.05	0.17	31.00	0.26	0.22	30.97
9HCYW3-5601	5.50	0.25	1.65	10.48	0.23	0.79	31.66	0.92	0.79	31.66
9JNDLW-5605	5.30	0.05	0.34	10.50	0.25	0.86	30.00	-0.74	-0.64	30.32
9LBAR3-5601	5.17	-0.08	-0.51	10.32	0.07	0.24	30.00	-0.74	-0.64	30.06
9XNDDZ-5605	5.50	0.25	1.65	10.00	-0.25	-0.86	33.37	2.63	2.28	33.37
9YXGP3-5605	5.40	0.15	0.99	10.50	0.25	0.86	31.00	0.26	0.22	30.95
A4QQQN-5605	3.85	-1.40	-9.16 X	7.88	-2.37	-8.17 X	29.20	-1.54	-1.34	29.25
AF2CXN-5601	5.40	0.15	0.99	10.10	-0.15	-0.52	32.30	1.56	1.35	32.32
AXL3WM-5605	5.23	-0.02	-0.12	10.26	0.01	0.03	30.60	-0.14	-0.12	30.65
AYFDRA-5605	5.30	0.05	0.34	10.30	0.05	0.17	31.00	0.26	0.22	30.97
AYXNMP-5605	4.20	-1.05	-6.87 X	8.80	-1.45	-5.00 X	50.00	19.26	16.69X	28.51
B2KKTU-5605	5.00	-0.25	-1.63	11.00	0.75	2.59	27.00	-3.74	-3.24 X	27.04 X
B3DTHP-5605	5.00	-0.25	-1.63	10.00	-0.25	-0.86	30.00	-0.74	-0.64	30.00
B78MFQ-5605	5.20	-0.05	-0.32	10.00	-0.25	-0.86	31.00	0.26	0.22	31.33
BDQTCX-5605	5.20	-0.05	-0.32	10.00	-0.25	-0.86	31.30	0.56	0.48	31.33
BFJ8YA-5601	5.50	0.25	1.65	10.50	0.25	0.86	31.59	0.85	0.73	31.59

TABLE 1

Stain B - Preparation Angle: 32°, continued

WebCode-Test	Width			Length			Angle			CalcAng
	mm*	Diff	CPV	mm*	Diff	CPV	Deg.	Diff	CPV	
BFKGVT-5605	5.20	-0.05	-0.32	10.30	0.05	0.17	30.00	-0.74	-0.64	30.32
BNREEP-5605	5.18	-0.07	-0.45	10.16	-0.09	-0.31	30.70	-0.04	-0.04	30.65
BP6XFM-5605	3.85	-1.40	-9.16 X	7.88	-2.37	-8.17 X	29.20	-1.54	-1.34	29.25
C2W2ZR-5605	10.55	5.30	34.73X	5.24	-5.01	-17.28X	29.76	-0.98	-0.85	
C4L4BM-5605	3.54	-1.71	-11.19X	6.99	-3.26	-11.24X	30.40	-0.34	-0.30	30.43
C6W6UZ-5601	5.40	0.15	0.99	9.90	-0.35	-1.21	33.10	2.36	2.04	33.06
CJZALL-5605	5.21	-0.04	-0.25	10.34	0.09	0.31	30.30	-0.44	-0.38	30.26
CMF4ZX-5601	5.20	-0.05	-0.32	10.60	0.35	1.21	29.40	-1.34	-1.16	29.38
CPZV8U-5605	5.00	-0.25	-1.63	10.00	-0.25	-0.86	30.00	-0.74	-0.64	30.00
CVP7LY-5605	5.22	-0.03	-0.19	10.38	0.13	0.45	30.20	-0.54	-0.47	30.19
CWXPZL-5605	4.00	-1.25	-8.18 X	8.00	-2.25	-7.76 X	30.00	-0.74	-0.64	30.00
D44ZB9-5605	5.40	0.15	0.99	10.40	0.15	0.52	31.00	0.26	0.22	31.28
DLXRW7-5605	5.10	-0.15	-0.97	9.70	-0.55	-1.90	32.00	1.26	1.09	31.72
DUTXP8-5605	5.00	-0.25	-1.63	10.00	-0.25	-0.86	30.00	-0.74	-0.64	30.00
DXBCHZ-5605	5.00	-0.25	-1.63	10.00	-0.25	-0.86	30.00	-0.74	-0.64	30.00
EBULCJ-5605	4.00	-1.25	-8.18 X	8.36	-1.89	-6.52 X	28.50	-2.24	-1.94	28.59
EC6G3H-5605	5.31	0.06	0.40	10.47	0.22	0.76	30.50	-0.24	-0.21	30.48
EFQZ8L-5605	5.33	0.08	0.53	9.47	-0.78	-2.69	34.20	3.46	3.00	34.25 X
EGMJAM-5605	5.00	-0.25	-1.63	10.00	-0.25	-0.86	30.00	-0.74	-0.64	30.00
EJ6MXK-5605	3.40	-1.85	-12.11X	3.85	-6.40	-22.07X	62.02	31.28	27.10X	62.02 X

TABLE 1

Stain B - Preparation Angle: 32°, continued

WebCode-Test	Width			Length			Angle			CalcAng
	mm*	Diff	CPV	mm*	Diff	CPV	Deg.	Diff	CPV	
EZA8GU-5601	5.30	0.05	0.34	9.90	-0.35	-1.21	32.00	1.26	1.09	32.37
F7FYLK-5605	5.20	-0.05	-0.32	10.10	-0.15	-0.52	31.00	0.26	0.22	30.99
F8P9CW-5605	5.00	-0.25	-1.63	9.80	-0.45	-1.55	31.00	0.26	0.22	30.68
FAWNKN-5605	15.00	9.75	63.89 X	28.00	17.75	61.21 X	32.30	1.56	1.35	32.39
FVC9HN-5605	5.30	0.05	0.34	10.10	-0.15	-0.52	31.60	0.86	0.74	31.65
G22U6G-5601	5.40	0.15	0.99	10.60	0.35	1.21	30.60	-0.14	-0.12	30.63
GDWYGN-5605	5.40	0.15	0.99	10.40	0.15	0.52	31.30	0.56	0.48	31.28
GE699L-5605	5.20	-0.05	-0.32	10.40	0.15	0.52	30.00	-0.74	-0.64	30.00
H2FQTM-5601	5.19	-0.06	-0.38	9.90	-0.35	-1.21	31.62	0.88	0.76	31.62
H3VEP3-5605	5.50	0.25	1.65	10.00	-0.25	-0.86	33.40	2.66	2.30	33.37
H9BQ9E-5605	5.25	0.00	0.01	10.14	-0.11	-0.38	31.20	0.46	0.40	31.18
HFFF2F-5605	4.12	-1.13	-7.39 X	8.71	-1.54	-5.31 X	28.23	-2.51	-2.18	28.23
HGPF7M-5601	5.30	0.05	0.34	10.20	-0.05	-0.17	31.31	0.57	0.49	31.31
HJF6N3-5605	5.30	0.05	0.34	10.40	0.15	0.52	31.00	0.26	0.22	30.64
HKBMP4-5605	5.10	-0.15	-0.97	10.00	-0.25	-0.86	30.66	-0.08	-0.07	30.66
HYL3BQ-5601	5.30	0.05	0.34	9.20	-1.05	-3.62 X	35.20	4.46	3.86 X	35.18 X
JFEXMH-5605	5.20	-0.05	-0.32	10.50	0.25	0.86	29.40	-1.34	-1.16	29.69
JQDTKD-5605	5.24	-0.01	-0.06	10.14	-0.11	-0.38	31.10	0.36	0.31	31.12
JUC4GD-5605	5.07	-0.18	-1.17	10.54	0.29	1.00	28.75	-1.99	-1.73	28.75
JWYNLG-5605	5.00	-0.25	-1.63	10.00	-0.25	-0.86	30.00	-0.74	-0.64	30.00

TABLE 1

Stain B - Preparation Angle: 32°, continued

WebCode-Test	Width			Length			Angle			CalcAng
	mm*	Diff	CPV	mm*	Diff	CPV	Deg.	Diff	CPV	
K7GMQR-5605	5.20	-0.05	-0.32	10.50	0.25	0.86	30.00	-0.74	-0.64	29.69
K7GUND-5605	3.93	-1.32	-8.64 X	8.50	-1.75	-6.04 X	27.53	-3.21	-2.78	27.54
K8C6RT-5605	5.20	-0.05	-0.32	10.60	0.35	1.21	29.70	-1.04	-0.90	29.38
KLXKVT-5605	5.20	-0.05	-0.32	10.40	0.15	0.52	30.00	-0.74	-0.64	30.00
KPWWQR-5601	5.00	-0.25	-1.63	10.00	-0.25	-0.86	30.00	-0.74	-0.64	30.00
LAZY4M-5605	5.15	-0.10	-0.65	10.25	0.00	0.00	30.09	-0.65	-0.57	30.16
LKHFYF-5605	5.40	0.15	0.99	10.00	-0.25	-0.86	32.68	1.94	1.68	32.68
LKJYWX-5605	5.32	0.07	0.47	9.62	-0.63	-2.17	33.58	2.84	2.46	33.57
LLN6WH-5605	4.90	-0.35	-2.28	9.00	-1.25	-4.31 X	33.00	2.26	1.96	32.99
LTQCGR-5605	5.20	-0.05	-0.32	10.40	0.15	0.52	30.00	-0.74	-0.64	30.00
M3RY4H-5605	5.20	-0.05	-0.32	10.20	-0.05	-0.17	31.00	0.26	0.22	30.65
M6YCRB-5605	5.09	-0.16	-1.04	10.13	-0.12	-0.41	30.20	-0.54	-0.47	30.16
MNCWNE-5605	5.40	0.15	0.99	10.60	0.35	1.21	30.70	-0.04	-0.04	30.63
MTQJED-5605	5.00	-0.25	-1.63	10.00	-0.25	-0.86	30.00	-0.74	-0.64	30.00
N8JN4L-5601	5.10	-0.15	-0.97	10.10	-0.15	-0.52	30.33	-0.41	-0.36	30.33
N9DCMG-5605	5.40	0.15	0.99	10.00	-0.25	-0.86	32.68	1.94	1.68	32.68
NB4FBH-5601	5.40	0.15	0.99	10.40	0.15	0.52	31.28	0.54	0.47	31.28
NP2PYN-5605	5.20	-0.05	-0.32	10.20	-0.05	-0.17	31.00	0.26	0.22	30.65
NT2TQB-5605	2.08	-3.17	-20.76 X	4.10	-6.15	-21.21 X	30.50	-0.24	-0.21	30.49
P82WTF-5605	5.30	0.05	0.34	10.20	-0.05	-0.17	31.31	0.57	0.49	31.31

TABLE 1

Stain B - Preparation Angle: 32°, continued

WebCode-Test	Width			Length			Angle			CalcAng
	mm*	Diff	CPV	mm*	Diff	CPV	Deg.	Diff	CPV	
PB2NWU-5605	5.20	-0.05	-0.32	10.30	0.05	0.17	30.00	-0.74	-0.64	30.32
PF8YRL-5601	5.13	-0.12	-0.78	10.11	-0.14	-0.48	30.00	-0.74	-0.64	30.49
PFWHUV-5605	5.14	-0.11	-0.71	10.03	-0.22	-0.76	30.80	0.06	0.05	30.83
PPU3UE-5605	5.20	-0.05	-0.32	10.80	0.55	1.90	28.00	-2.74	-2.38	28.78
PTGXXU-5605	5.30	0.05	0.34	10.50	0.25	0.86	30.00	-0.74	-0.64	30.32
Q9NVJJ-5605	5.00	-0.25	-1.63	10.50	0.25	0.86	28.40	-2.34	-2.03	28.44
QA3HV7-5605	5.24	-0.01	-0.06	10.55	0.30	1.03	29.80	-0.94	-0.82	29.78
QAM2ZD-5605	5.50	0.25	1.65	10.62	0.37	1.28	31.20	0.46	0.40	31.19
QEFL2V-5605	5.50	0.25	1.65	10.00	-0.25	-0.86	33.40	2.66	2.30	33.37
QM9BMJ-5601	5.40	0.15	0.99	10.10	-0.15	-0.52	32.30	1.56	1.35	32.32
QQ9LJJ-5601	5.50	0.25	1.65	9.50	-0.75	-2.59	35.00	4.26	3.69 X	35.38 X
QRKJQ9-5605	5.10	-0.15	-0.97	10.30	0.05	0.17	30.00	-0.74	-0.64	29.68
RNDKU7-5605	80.20	74.95	491.0X	155.60	145.35	501.2X	31.00	0.26	0.22	31.03
RQ4LXA-5605	5.00	-0.25	-1.63	9.40	-0.85	-2.93	32.13	1.39	1.20	32.13
RRY6ZB-5605	5.30	0.05	0.34	10.50	0.25	0.86	30.31	-0.43	-0.38	30.32
RTR2MJ-5605	5.20	-0.05	-0.32	10.10	-0.15	-0.52	31.00	0.26	0.22	30.99
RU239H-5601	5.20	-0.05	-0.32	10.40	0.15	0.52	30.00	-0.74	-0.64	30.00
RXMUFE-5605	5.41	0.16	1.06	10.50	0.25	0.86	31.00	0.26	0.22	31.01
RZ9UD9-5605	5.30	0.05	0.34	10.40	0.15	0.52	30.60	-0.14	-0.12	30.64
T3FWYR-5605	5.20	-0.05	-0.32	10.10	-0.15	-0.52	31.00	0.26	0.22	30.99

TABLE 1

Stain B - Preparation Angle: 32°, continued

WebCode-Test	Width			Length			Angle			CalcAng
	mm*	Diff	CPV	mm*	Diff	CPV	Deg.	Diff	CPV	
T3PKXB-5605	5.30	0.05	0.34	10.20	-0.05	-0.17	31.30	0.56	0.48	31.31
T3VUUG-5601	5.20	-0.05	-0.32	10.40	0.15	0.52	30.00	-0.74	-0.64	30.00
T7A7A7-5605	1.31	-3.94	-25.80 X	2.58	-7.67	-26.45 X	30.50	-0.24	-0.21	30.51
TG7HY6-5605	4.00	-1.25	-8.18 X	8.00	-2.25	-7.76 X	30.00	-0.74	-0.64	30.00
TJ3U3K-5605	5.30	0.05	0.34	10.30	0.05	0.17	31.00	0.26	0.22	30.97
U7NWTA-5605	5.30	0.05	0.34	10.60	0.35	1.21	30.00	-0.74	-0.64	30.00
UQBPE6-5601	5.60	0.35	2.30	10.60	0.35	1.21	31.90	1.16	1.00	31.89
VA9NJQ-5605	5.50	0.25	1.65	11.00	0.75	2.59	30.00	-0.74	-0.64	30.00
VBHCJA-5605	5.26	0.01	0.08	10.53	0.28	0.96	29.96	-0.78	-0.68	29.97
WLWPF4-5605	5.32	0.07	0.47	10.65	0.40	1.38	30.00	-0.74	-0.64	29.97
X67L9L-5605	5.35	0.10	0.67	10.20	-0.05	-0.17	32.00	1.26	1.09	31.64
X7DK38-5605	5.50	0.25	1.65	9.00	-1.25	-4.31 X	37.70	6.96	6.03 X	37.67 X
XEPFMG-5605	5.30	0.05	0.34	10.10	-0.15	-0.52	31.70	0.96	0.83	31.65
XRYFXZ-5605	2.18	-3.07	-20.10 X	4.24	-6.01	-20.73 X	30.90	0.16	0.14	30.94
Y4QPFM-5605	5.60	0.35	2.30	10.30	0.05	0.17	33.00	2.26	1.96	32.94
YFGZN7-5605	5.00	-0.25	-1.63	10.00	-0.25	-0.86	30.00	-0.74	-0.64	30.00
YKCPC6-5605	5.30	0.05	0.34	10.00	-0.25	-0.86	32.00	1.26	1.09	32.01
YKDKUB-5605	5.30	0.05	0.34	10.20	-0.05	-0.17	31.30	0.56	0.48	31.31
YUGWQ6-5605	5.32	0.07	0.47	10.45	0.20	0.69	30.60	-0.14	-0.12	30.60
Z8ZN8Y-5605	5.15	-0.10	-0.65	9.55	-0.70	-2.41	32.63	1.89	1.64	32.63

TABLE 1

Stain B - Preparation Angle: 32°, continued

WebCode-Test	Width			Length			Angle			CalcAng
	mm*	Diff	CPV	mm*	Diff	CPV	Deg.	Diff	CPV	
ZB6A3C-5605	5.20	-0.05	-0.32	10.50	0.25	0.86	30.00	-0.74	-0.64	29.69
ZE6KU6-5605	5.00	-0.25	-1.63	10.00	-0.25	-0.86	30.00	-0.74	-0.64	30.00
ZQYUJZ-5605	5.20	-0.05	-0.32	10.30	0.05	0.17	30.30	-0.44	-0.38	30.32
ZRQEKK-5601	5.40	0.15	0.99	10.40	0.15	0.52	31.28	0.54	0.47	31.28
ZTM99A-5601	5.25	0.00	0.01	10.50	0.25	0.86	30.00	-0.74	-0.64	30.00

Summary Statistics for Stain B - Preparation Angle: 32°

	Width (mm*)	Length (mm*)	Angle°	CalcAng°
Grand Mean	5.25	10.25	30.74	30.71
Standard Deviation	0.15	0.29	1.15	1.11
Participants Included in calculations	124	121	139	138
Participants excluded from calculations (indicated by X)	21	24	6	6

**Statistical evaluation for length/width measurements includes those who did not report in mm, which may result in a higher number of participants excluded from these calculations. This difference in measurement unit has no effect on the statistical evaluation of the Angle° or CalcAng° data.*

TABLE 1

Stain C - Preparation Angle: 38°

WebCode-Test	Width			Length			Angle			CalcAng
	mm*	Diff	CPV	mm*	Diff	CPV	Deg.	Diff	CPV	
37ZJPV-5605	3.68	1.29	8.57 X	6.68	2.38	6.54 X	33.40	-0.22	-0.11	33.43
39NDLJ-5605	2.10	-0.29	-1.95	4.30	0.00	0.00	29.24	-4.38	-2.10	29.23
3WDMLA-5605	2.40	0.01	0.04	4.70	0.40	1.10	31.00	-2.62	-1.26	30.71
3ZYPQG-5605	2.40	0.01	0.04	4.30	0.00	0.00	33.90	0.28	0.13	33.93
43EXDZ-5605	2.40	0.01	0.04	4.40	0.10	0.27	33.05	-0.57	-0.27	33.06
47HU2A-5605	2.50	0.11	0.71	4.40	0.10	0.27	34.10	0.48	0.23	34.62
4JLDEU-5605	1.15	-1.24	-8.28 X	2.00	-2.30	-6.33 X	35.10	1.48	0.71	35.10
4LCEHW-5601	2.40	0.01	0.04	4.70	0.40	1.10	31.02	-2.60	-1.25	30.71
63CQQX-5605	2.40	0.01	0.04	4.00	-0.30	-0.83	37.00	3.38	1.62	36.87
644UBT-5605	2.40	0.01	0.04	4.20	-0.10	-0.28	35.00	1.38	0.66	34.85
664MD8-5601	2.50	0.11	0.71	4.35	0.05	0.13	35.08	1.46	0.70	35.08
67B7WZ-5605	2.41	0.02	0.11	4.42	0.12	0.33	33.00	-0.62	-0.30	33.04
6AAHTZ-5601	2.80	0.41	2.71	4.90	0.60	1.65	34.90	1.28	0.61	34.85
6MXKEY-5601	2.10	-0.29	-1.95	3.80	-0.50	-1.38	33.55	-0.07	-0.03	33.55
6RPRT2-5605	1.90	-0.49	-3.29 X	3.40	-0.90	-2.48	34.00	0.38	0.18	33.97
6RU9RZ-5605	52.19	49.80	331.7X	95.78	91.48	251.6X	33.02	-0.60	-0.29	33.02
6U2N6X-5605	2.30	-0.09	-0.62	4.50	0.20	0.55	30.70	-2.92	-1.40	30.74
6YUNJT-5605	2.40	0.01	0.04	4.20	-0.10	-0.28	35.00	1.38	0.66	34.85
7D4YHY-5605	2.10	-0.29	-1.95	4.30	0.00	0.00	29.00	-4.62	-2.22	29.23
7PJLXR-5601	2.40	0.01	0.04	4.20	-0.10	-0.28	34.85	1.23	0.59	34.85

TABLE 1

Stain C - Preparation Angle: 38°, continued

WebCode-Test	Width			Length			Angle			CalcAng
	mm*	Diff	CPV	mm*	Diff	CPV	Deg.	Diff	CPV	
7TJ4PR-5601	2.38	-0.01	-0.09	4.51	0.21	0.57	31.85	-1.77	-0.85	31.85
7UEFT9-5605	2.40	0.01	0.04	4.40	0.10	0.27	32.60	-1.02	-0.49	33.06
83LJBQ-5605	1.89	-0.50	-3.35 X	3.81	-0.49	-1.35	30.00	-3.62	-1.74	29.74
89VTLT-5605	2.20	-0.19	-1.29	4.10	-0.20	-0.55	32.50	-1.12	-0.54	32.45
9BDCZW-5605	2.40	0.01	0.04	4.60	0.30	0.82	31.40	-2.22	-1.07	31.45
9HCYW3-5601	2.50	0.11	0.71	4.32	0.02	0.05	35.36	1.74	0.83	35.36
9JNDLW-5605	2.40	0.01	0.04	4.40	0.10	0.27	33.00	-0.62	-0.30	33.06
9LBAR3-5601	2.28	-0.11	-0.75	4.40	0.10	0.27	31.00	-2.62	-1.26	31.21
9XNDDZ-5605	2.50	0.11	0.71	4.25	-0.05	-0.14	36.03	2.41	1.16	36.03
9YXGP3-5605	2.40	0.01	0.04	4.70	0.40	1.10	31.00	-2.62	-1.26	30.71
A4QQQN-5605	2.01	-0.38	-2.55	3.24	-1.06	-2.92	38.30	4.68	2.25	38.34
AF2CXN-5601	2.50	0.11	0.71	4.20	-0.10	-0.28	36.50	2.88	1.38	36.53
AXL3WM-5605	2.39	0.00	-0.02	4.21	-0.09	-0.25	34.50	0.88	0.42	34.59
AYFDRA-5605	2.40	0.01	0.04	4.60	0.30	0.82	31.40	-2.22	-1.07	31.45
AYXNMP-5605	1.70	-0.69	-4.62 X	3.44	-0.86	-2.37	52.00	18.38	8.82 X	29.62
B2KKTU-5605	2.00	-0.39	-2.62	4.50	0.20	0.55	26.40	-7.22	-3.47 X	26.39 X
B3DTHP-5605	3.00	0.61	4.04 X	4.00	-0.30	-0.83	48.00	14.38	6.90 X	48.59 X
B78MFQ-5605	2.40	0.01	0.04	4.40	0.10	0.27	33.00	-0.62	-0.30	33.06
BDQTCX-5605	2.40	0.01	0.04	4.40	0.10	0.27	33.00	-0.62	-0.30	33.06
BFJ8YA-5601	2.50	0.11	0.71	4.50	0.20	0.55	33.75	0.13	0.06	33.75

TABLE 1

Stain C - Preparation Angle: 38°, continued

WebCode-Test	Width			Length			Angle			CalcAng
	mm*	Diff	CPV	mm*	Diff	CPV	Deg.	Diff	CPV	
BFKGVT-5605	2.40	0.01	0.04	4.30	0.00	0.00	34.00	0.38	0.18	33.93
BNREEP-5605	2.44	0.05	0.31	4.53	0.23	0.63	36.20	2.58	1.24	32.59
BP6XFM-5605	2.01	-0.38	-2.55	3.24	-1.06	-2.92	38.30	4.68	2.25	38.34
C2W2ZR-5605	4.46	2.07	13.77 X	2.40	-1.90	-5.23 X	32.52	-1.10	-0.53	
C4L4BM-5605	2.82	0.43	2.84	5.10	0.80	2.20	33.60	-0.02	-0.01	33.57
C6W6UZ-5601	2.50	0.11	0.71	4.20	-0.10	-0.28	36.50	2.88	1.38	36.53
CJZALL-5605	2.39	0.00	-0.02	4.50	0.20	0.55	32.10	-1.52	-0.73	32.08
CMF4ZX-5601	2.40	0.01	0.04	4.50	0.20	0.55	32.20	-1.42	-0.68	32.23
CPZV8U-5605	2.50	0.11	0.71	4.00	-0.30	-0.83	38.68	5.06	2.43	38.68
CVP7LY-5605	2.40	0.01	0.04	4.33	0.03	0.08	33.70	0.08	0.04	33.66
CWXPZL-5605	2.00	-0.39	-2.62	4.00	-0.30	-0.83	30.00	-3.62	-1.74	30.00
D44ZB9-5605	2.50	0.11	0.71	4.50	0.20	0.55	34.00	0.38	0.18	33.75
DLXRW7-5605	2.50	0.11	0.71	4.40	0.10	0.27	34.00	0.38	0.18	34.62
DUTXP8-5605	2.50	0.11	0.71	3.50	-0.80	-2.20	45.00	11.38	5.46 X	45.58 X
DXBCHZ-5605	2.50	0.11	0.71	4.50	0.20	0.55	34.00	0.38	0.18	33.75
EBULCJ-5605	1.80	-0.59	-3.95 X	3.40	-0.90	-2.48	31.90	-1.72	-0.83	31.97
EC6G3H-5605	2.46	0.07	0.44	4.63	0.33	0.90	32.10	-1.52	-0.73	32.09
EFQZ8L-5605	2.43	0.04	0.24	4.00	-0.30	-0.83	35.30	1.68	0.81	37.41
EGMJAM-5605	2.00	-0.39	-2.62	3.50	-0.80	-2.20	35.00	1.38	0.66	34.85
EJ6MXK-5605	1.76	-0.63	-4.22 X	3.15	-1.15	-3.17 X	33.97	0.35	0.17	33.97

TABLE 1

Stain C - Preparation Angle: 38°, continued

WebCode-Test	Width			Length			Angle			CalcAng
	mm*	Diff	CPV	mm*	Diff	CPV	Deg.	Diff	CPV	
EZA8GU-5601	2.50	0.11	0.71	4.40	0.10	0.27	35.00	1.38	0.66	34.62
F7FYLK-5605	2.60	0.21	1.38	4.75	0.45	1.23	33.20	-0.42	-0.20	33.19
F8P9CW-5605	2.20	-0.19	-1.29	4.40	0.10	0.27	30.00	-3.62	-1.74	30.00
FAWNKN-5605	2.10	-0.29	-1.95	3.50	-0.80	-2.20	36.80	3.18	1.53	36.87
FVC9HN-5605	2.40	0.01	0.04	4.60	0.30	0.82	31.40	-2.22	-1.07	31.45
G22U6G-5601	2.40	0.01	0.04	4.70	0.40	1.10	30.70	-2.92	-1.40	30.71
GDWYGN-5605	2.40	0.01	0.04	4.20	-0.10	-0.28	34.80	1.18	0.57	34.85
GE699L-5605	2.50	0.11	0.71	4.20	-0.10	-0.28	36.50	2.88	1.38	36.53
H2FQTM-5601	2.31	-0.08	-0.55	4.54	0.24	0.66	30.58	-3.04	-1.46	30.58
H3VEP3-5605	2.40	0.01	0.04	4.20	-0.10	-0.28	34.80	1.18	0.57	34.85
H9BQ9E-5605	2.44	0.05	0.31	4.39	0.09	0.24	33.80	0.18	0.09	33.77
HFFF2F-5605	2.04	-0.35	-2.35	3.38	-0.92	-2.53	37.12	3.50	1.68	37.12
HGPF7M-5601	2.40	0.01	0.04	4.10	-0.20	-0.55	35.83	2.21	1.06	35.83
HJF6N3-5605	2.50	0.11	0.71	4.40	0.10	0.27	35.00	1.38	0.66	34.62
HKBMP4-5605	2.40	0.01	0.04	4.10	-0.20	-0.55	35.82	2.20	1.06	35.83
HYL3BQ-5601	2.30	-0.09	-0.62	3.80	-0.50	-1.38	37.20	3.58	1.72	37.25
JFEXMH-5605	2.40	0.01	0.04	4.40	0.10	0.27	33.40	-0.22	-0.11	33.06
JQDTKD-5605	2.41	0.02	0.11	4.41	0.11	0.30	33.10	-0.52	-0.25	33.13
JUC4GD-5605	2.40	0.01	0.04	4.02	-0.28	-0.77	36.66	3.04	1.46	36.66
JWYNLG-5605	2.50	0.11	0.71	4.50	0.20	0.55	33.80	0.18	0.09	33.75

TABLE 1

Stain C - Preparation Angle: 38°, continued

WebCode-Test	Width			Length			Angle			CalcAng
	mm*	Diff	CPV	mm*	Diff	CPV	Deg.	Diff	CPV	
K7GMQR-5605	2.40	0.01	0.04	4.40	0.10	0.27	33.00	-0.62	-0.30	33.06
K7GUND-5605	1.97	-0.42	-2.82	3.43	-0.87	-2.40	35.05	1.43	0.69	35.05
K8C6RT-5605	2.40	0.01	0.04	4.40	0.10	0.27	33.70	0.08	0.04	33.06
KLXKVT-5605	2.40	0.01	0.04	4.50	0.20	0.55	32.00	-1.62	-0.78	32.23
KPWWQR-5601	2.50	0.11	0.71	4.50	0.20	0.55	33.75	0.13	0.06	33.75
LAZY4M-5605	2.45	0.06	0.38	4.25	-0.05	-0.14	35.12	1.50	0.72	35.20
LKHFYF-5605	2.40	0.01	0.04	4.20	-0.10	-0.28	34.85	1.23	0.59	34.85
LKJYWX-5605	2.42	0.03	0.18	4.18	-0.12	-0.33	35.38	1.76	0.84	35.38
LLN6WH-5605	2.20	-0.19	-1.29	3.80	-0.50	-1.38	35.30	1.68	0.81	35.38
LTQCGR-5605	2.50	0.11	0.71	4.50	0.20	0.55	33.00	-0.62	-0.30	33.75
M3RY4H-5605	2.20	-0.19	-1.29	4.00	-0.30	-0.83	33.00	-0.62	-0.30	33.37
M6YCRB-5605	2.36	-0.03	-0.22	4.41	0.11	0.30	32.50	-1.12	-0.54	32.35
MNCWNE-5605	2.40	0.01	0.04	4.60	0.30	0.82	32.30	-1.32	-0.63	31.45
MTQJED-5605	2.20	-0.19	-1.29	4.00	-0.30	-0.83	33.30	-0.32	-0.15	33.37
N8JN4L-5601	2.30	-0.09	-0.62	4.30	0.00	0.00	32.34	-1.28	-0.62	32.34
N9DCMG-5605	2.50	0.11	0.71	4.50	0.20	0.55	33.75	0.13	0.06	33.75
NB4FBH-5601	2.40	0.01	0.04	4.80	0.50	1.37	30.00	-3.62	-1.74	30.00
NP2PYN-5605	2.40	0.01	0.04	4.30	0.00	0.00	34.00	0.38	0.18	33.93
NT2TQB-5605	2.08	-0.31	-2.09	3.75	-0.55	-1.52	33.70	0.08	0.04	33.69
P82WTF-5605	2.40	0.01	0.04	4.30	0.00	0.00	33.93	0.31	0.15	33.93

TABLE 1

Stain C - Preparation Angle: 38°, continued

WebCode-Test	Width			Length			Angle			CalcAng
	mm*	Diff	CPV	mm*	Diff	CPV	Deg.	Diff	CPV	
PB2NWU-5605	2.30	-0.09	-0.62	4.40	0.10	0.27	32.00	-1.62	-0.78	31.52
PF8YRL-5601	2.25	-0.14	-0.95	4.20	-0.10	-0.28	32.00	-1.62	-0.78	32.39
PFWHUV-5605	2.28	-0.11	-0.75	3.94	-0.36	-0.99	35.40	1.78	0.85	35.36
PPU3UE-5605	2.40	0.01	0.04	4.80	0.50	1.37	30.00	-3.62	-1.74	30.00
PTGXXU-5605	2.50	0.11	0.71	4.70	0.40	1.10	32.00	-1.62	-0.78	32.13
Q9NVJJ-5605	2.50	0.11	0.71	4.00	-0.30	-0.83	38.70	5.08	2.44	38.68
QA3HV7-5605	2.38	-0.01	-0.09	4.57	0.27	0.74	31.40	-2.22	-1.07	31.39
QAM2ZD-5605	2.56	0.17	1.11	4.39	0.09	0.24	35.70	2.08	1.00	35.67
QEFL2V-5605	2.50	0.11	0.71	5.00	0.70	1.92	30.00	-3.62	-1.74	30.00
QM9BMJ-5601	2.70	0.31	2.04	4.40	0.10	0.27	37.90	4.28	2.05	37.85
QQ9LJJ-5601	2.50	0.11	0.71	4.50	0.20	0.55	34.00	0.38	0.18	33.75
QRKJQ9-5605	2.40	0.01	0.04	4.60	0.30	0.82	31.00	-2.62	-1.26	31.45
RNDKU7-5605	102.40	100.01	666.1 X	174.90	170.60	469.2 X	35.80	2.18	1.05	35.84
RQ4LXA-5605	2.40	0.01	0.04	4.20	-0.10	-0.28	34.85	1.23	0.59	34.85
RRY6ZB-5605	2.40	0.01	0.04	4.70	0.40	1.10	30.70	-2.92	-1.40	30.71
RTR2MJ-5605	2.40	0.01	0.04	4.40	0.10	0.27	33.10	-0.52	-0.25	33.06
RU239H-5601	2.50	0.11	0.71	4.30	0.00	0.00	35.50	1.88	0.90	35.55
RXMUFE-5605	2.58	0.19	1.24	4.64	0.34	0.93	34.00	0.38	0.18	33.78
RZ9UD9-5605	2.40	0.01	0.04	4.50	0.20	0.55	32.90	-0.72	-0.35	32.23
T3FWYR-5605	2.50	0.11	0.71	3.60	-0.70	-1.93	43.90	10.28	4.93 X	43.98 X

TABLE 1

Stain C - Preparation Angle: 38°, continued

WebCode-Test	Width			Length			Angle			CalcAng
	mm*	Diff	CPV	mm*	Diff	CPV	Deg.	Diff	CPV	
T3PKXB-5605	2.40	0.01	0.04	4.40	0.10	0.27	33.10	-0.52	-0.25	33.06
T3VUUG-5601	2.40	0.01	0.04	4.20	-0.10	-0.28	36.00	2.38	1.14	34.85
T7A7A7-5605	0.65	-1.74	-11.61 X	1.16	-3.14	-8.64 X	34.10	0.48	0.23	34.08
TG7HY6-5605	3.00	0.61	4.04 X	4.00	-0.30	-0.83	49.00	15.38	7.38 X	48.59 X
TJ3U3K-5605	2.40	0.01	0.04	4.50	0.20	0.55	32.20	-1.42	-0.68	32.23
U7NWTA-5605	2.40	0.01	0.04	4.50	0.20	0.55	32.20	-1.42	-0.68	32.23
UQBPE6-5601	2.40	0.01	0.04	4.60	0.30	0.82	31.50	-2.12	-1.02	31.45
VA9NJQ-5605	2.50	0.11	0.71	4.90	0.60	1.65	30.68	-2.94	-1.41	30.68
VBHCJA-5605	2.45	0.06	0.38	4.33	0.03	0.08	34.53	0.91	0.44	34.46
WLWPF4-5605	2.80	0.41	2.71	5.00	0.70	1.92	34.00	0.38	0.18	34.06
X67L9L-5605	2.45	0.06	0.38	4.42	0.12	0.33	34.00	0.38	0.18	33.66
X7DK38-5605	2.50	0.11	0.71	4.00	-0.30	-0.83	38.70	5.08	2.44	38.68
XEPFMG-5605	2.40	0.01	0.04	4.60	0.30	0.82	31.40	-2.22	-1.07	31.45
XRYFXZ-5605	1.42	-0.97	-6.48 X	2.58	-1.72	-4.73 X	33.40	-0.22	-0.11	33.39
Y4QPFM-5605	2.50	0.11	0.71	4.60	0.30	0.82	33.00	-0.62	-0.30	32.92
YFGZN7-5605	2.40	0.01	0.04	4.50	0.20	0.55	32.23	-1.39	-0.67	32.23
YKCPC6-5605	2.40	0.01	0.04	4.50	0.20	0.55	32.20	-1.42	-0.68	32.23
YKDKUB-5605	2.50	0.11	0.71	4.50	0.20	0.55	33.70	0.08	0.04	33.75
YUGWQ6-5605	2.42	0.03	0.18	4.52	0.22	0.60	32.37	-1.25	-0.60	32.37
Z8ZN8Y-5605	2.26	-0.13	-0.89	3.91	-0.39	-1.08	35.31	1.69	0.81	35.31

TABLE 1

Stain C - Preparation Angle: 38°, continued

WebCode-Test	Width			Length			Angle			CalcAng
	mm*	Diff	CPV	mm*	Diff	CPV	Deg.	Diff	CPV	
ZB6A3C-5605	2.30	-0.09	-0.62	4.60	0.30	0.82	30.00	-3.62	-1.74	30.00
ZE6KU6-5605	2.50	0.11	0.71	4.50	0.20	0.55	33.75	0.13	0.06	33.75
ZQYUJZ-5605	5.90	3.51	23.36X	10.51	6.21	17.08X	34.20	0.58	0.28	34.15
ZRQEKK-5601	2.50	0.11	0.71	4.30	0.00	0.00	35.55	1.93	0.93	35.55
ZTM99A-5601	2.50	0.11	0.71	4.50	0.20	0.55	33.70	0.08	0.04	33.75

Summary Statistics for Stain C - Preparation Angle: 38°

	Width (mm*)	Length (mm*)	Angle°	CalcAng°
Grand Mean	2.39	4.30	33.62	33.57
Standard Deviation	0.15	0.36	2.08	2.12
Participants Included in calculations	130	136	139	139
Participants excluded from calculations (indicated by X)	15	9	6	5

**Statistical evaluation for length/width measurements includes those who did not report in mm, which may result in a higher number of participants excluded from these calculations. This difference in measurement unit has no effect on the statistical evaluation of the Angle° or CalcAng° data.*

TABLE 1

Stain D - Preparation Angle: 21°

WebCode-Test	Width			Length			Angle			CalcAng
	mm*	Diff	CPV	mm*	Diff	CPV	Deg.	Diff	CPV	
37ZJPV-5605	3.47	1.46	18.06 X	9.41	3.82	11.12 X	21.60	0.49	0.33	21.64
39NDLJ-5605	2.10	0.09	1.14	5.30	-0.29	-0.84	23.34	2.23	1.52	23.34
3WDMLA-5605	2.10	0.09	1.14	5.80	0.21	0.61	21.00	-0.11	-0.08	21.23
3ZYPQG-5605	1.80	-0.21	-2.57	5.60	0.01	0.03	18.70	-2.41	-1.64	18.75
43EXDZ-5605	2.00	-0.01	-0.09	5.40	-0.19	-0.55	21.73	0.62	0.42	21.74
47HU2A-5605	2.10	0.09	1.14	5.70	0.11	0.32	21.10	-0.01	-0.01	21.62
4JLDEU-5605	0.92	-1.09	-13.44 X	2.29	-3.30	-9.60 X	23.70	2.59	1.76	23.69
4LCEHW-5601	2.00	-0.01	-0.09	6.00	0.41	1.20	19.51	-1.60	-1.09	19.47
63CQQX-5605	2.00	-0.01	-0.09	5.00	-0.59	-1.72	24.00	2.89	1.97	23.58
644UBT-5605	1.90	-0.11	-1.33	5.40	-0.19	-0.55	21.00	-0.11	-0.08	20.60
664MD8-5601	2.10	0.09	1.14	5.62	0.03	0.09	21.94	0.83	0.56	21.94
67B7WZ-5605	2.03	0.02	0.28	5.18	-0.41	-1.19	23.00	1.89	1.29	23.07
6AAHTZ-5601	2.00	-0.01	-0.09	6.10	0.51	1.49	19.10	-2.01	-1.37	19.14
6MXKEY-5601	1.80	-0.21	-2.57	5.00	-0.59	-1.72	21.10	-0.01	-0.01	21.10
6RPRT2-5605	1.60	-0.41	-5.04 X	4.40	-1.19	-3.46 X	21.30	0.19	0.13	21.32
6RU9RZ-5605	36.28	34.27	423.3 X	103.15	97.56	284.0 X	20.59	-0.52	-0.36	20.59
6U2N6X-5605	1.90	-0.11	-1.33	5.70	0.11	0.32	19.50	-1.61	-1.10	19.47
6YUNJT-5605	2.00	-0.01	-0.09	5.60	0.01	0.03	21.00	-0.11	-0.08	20.92
7D4YHY-5605	2.00	-0.01	-0.09	5.80	0.21	0.61	20.00	-1.11	-0.76	20.17
7PJLXR-5601	2.00	-0.01	-0.09	5.60	0.01	0.03	20.92	-0.19	-0.13	20.92

TABLE 1

Stain D - Preparation Angle: 21°, continued

WebCode-Test	Width			Length			Angle			CalcAng
	mm*	Diff	CPV	mm*	Diff	CPV	Deg.	Diff	CPV	
7TJ4PR-5601	2.00	-0.01	-0.09	6.00	0.41	1.20	19.47	-1.64	-1.12	19.47
7UEFT9-5605	2.00	-0.01	-0.09	5.70	0.11	0.32	20.30	-0.81	-0.55	20.54
83LJBQ-5605	1.48	-0.53	-6.52 X	4.64	-0.95	-2.76	19.00	-2.11	-1.44	18.60
89VTLT-5605	2.10	0.09	1.14	5.10	-0.49	-1.42	24.30	3.19	2.17	24.32
9BDCZW-5605	2.00	-0.01	-0.09	5.70	0.11	0.32	20.50	-0.61	-0.42	20.54
9HCYW3-5601	2.10	0.09	1.14	5.65	0.06	0.18	21.82	0.71	0.48	21.82
9JNDLW-5605	2.00	-0.01	-0.09	5.60	0.01	0.03	21.00	-0.11	-0.08	20.92
9LBAR3-5601	1.91	-0.10	-1.21	5.63	0.04	0.12	20.00	-1.11	-0.76	19.83
9XNDDZ-5605	1.75	-0.26	-3.18 X	5.00	-0.59	-1.72	20.49	-0.62	-0.42	20.49
9YXGP3-5605	2.00	-0.01	-0.09	5.80	0.21	0.61	20.00	-1.11	-0.76	20.17
A4QQQN-5605	1.60	-0.41	-5.04 X	3.82	-1.77	-5.15 X	24.70	3.59	2.44	24.76
AF2CXN-5601	2.00	-0.01	-0.09	5.40	-0.19	-0.55	21.70	0.59	0.40	21.74
AXL3WM-5605	1.98	-0.03	-0.34	5.53	-0.06	-0.17	20.90	-0.21	-0.14	20.98
AYFDRA-5605	2.00	-0.01	-0.09	6.10	0.51	1.49	19.10	-2.01	-1.37	19.14
AYXNMP-5605	1.40	-0.61	-7.51 X	4.58	-1.01	-2.94	31.00	9.89	6.74 X	17.80
B2KKTU-5605	2.00	-0.01	-0.09	6.00	0.41	1.20	19.50	-1.61	-1.10	19.47
B3DTHP-5605	2.00	-0.01	-0.09	6.00	0.41	1.20	19.00	-2.11	-1.44	19.47
B78MFQ-5605	1.90	-0.11	-1.33	5.20	-0.39	-1.13	21.00	-0.11	-0.08	21.43
BDQTCX-5605	1.90	-0.11	-1.33	5.80	0.21	0.61	19.10	-2.01	-1.37	19.12
BFJ8YA-5601	2.00	-0.01	-0.09	6.00	0.41	1.20	19.47	-1.64	-1.12	19.47

TABLE 1

Stain D - Preparation Angle: 21°, continued

WebCode-Test	Width			Length			Angle			CalcAng
	mm*	Diff	CPV	mm*	Diff	CPV	Deg.	Diff	CPV	
BFKGVT-5605	2.00	-0.01	-0.09	5.50	-0.09	-0.26	21.00	-0.11	-0.08	21.32
BNREEP-5605	1.81	-0.20	-2.44	6.14	0.55	1.60	17.10	-4.01	-2.73	17.14
BP6XFM-5605	1.60	-0.41	-5.04 X	3.82	-1.77	-5.15 X	24.70	3.59	2.44	24.76
C2W2ZR-5605	5.81	3.80	46.97 X	2.01	-3.58	-10.42 X	20.25	-0.86	-0.59	
C4L4BM-5605	2.47	0.46	5.71 X	6.91	1.32	3.84 X	20.90	-0.21	-0.14	20.94
C6W6UZ-5601	2.00	-0.01	-0.09	5.20	-0.39	-1.13	22.60	1.49	1.01	22.62
CJZALL-5605	2.09	0.08	1.02	5.56	-0.03	-0.09	22.10	0.99	0.67	22.08
CMF4ZX-5601	2.00	-0.01	-0.09	5.60	0.01	0.03	20.90	-0.21	-0.14	20.92
CPZV8U-5605	2.00	-0.01	-0.09	5.50	-0.09	-0.26	21.32	0.21	0.14	21.32
CVP7LY-5605	1.97	-0.04	-0.47	5.73	0.14	0.41	20.10	-1.01	-0.69	20.11
CWXPZL-5605	1.70	-0.31	-3.80 X	4.00	-1.59	-4.63 X	25.00	3.89	2.65	25.15
D44ZB9-5605	2.10	0.09	1.14	5.80	0.21	0.61	22.00	0.89	0.60	21.23
DLXRW7-5605	2.00	-0.01	-0.09	5.80	0.21	0.61	21.00	-0.11	-0.08	20.17
DUTXP8-5605	2.00	-0.01	-0.09	5.00	-0.59	-1.72	23.60	2.49	1.69	23.58
DXBCHZ-5605	2.00	-0.01	-0.09	5.50	-0.09	-0.26	21.00	-0.11	-0.08	21.32
EBULCJ-5605	1.34	-0.67	-8.25 X	4.60	-0.99	-2.88	16.90	-4.21	-2.87	16.94
EC6G3H-5605	2.09	0.08	1.02	5.73	0.14	0.41	21.40	0.29	0.20	21.39
EFQZ8L-5605	2.03	0.02	0.28	4.97	-0.62	-1.80	24.10	2.99	2.04	24.11
EGMJAM-5605	2.00	-0.01	-0.09	5.00	-0.59	-1.72	24.00	2.89	1.97	23.58
EJ6MXK-5605	1.22	-0.79	-9.73 X	3.17	-2.42	-7.04 X	22.63	1.52	1.03	22.63

TABLE 1

Stain D - Preparation Angle: 21°, continued

WebCode-Test	Width			Length			Angle			CalcAng
	mm*	Diff	CPV	mm*	Diff	CPV	Deg.	Diff	CPV	
EZA8GU-5601	2.10	0.09	1.14	5.50	-0.09	-0.26	22.00	0.89	0.60	22.45
F7FYLK-5605	2.40	0.39	4.85 X	6.00	0.41	1.20	23.60	2.49	1.69	23.58
F8P9CW-5605	1.80	-0.21	-2.57	5.60	0.01	0.03	19.00	-2.11	-1.44	18.75
FAWNKN-5605	5.80	3.79	46.84 X	15.00	9.41	27.39 X	22.70	1.59	1.08	22.75
FVC9HN-5605	2.00	-0.01	-0.09	5.20	-0.39	-1.13	22.60	1.49	1.01	22.62
G22U6G-5601	2.00	-0.01	-0.09	5.80	0.21	0.61	20.20	-0.91	-0.62	20.17
GDWYGN-5605	2.10	0.09	1.14	5.60	0.01	0.03	22.00	0.89	0.60	22.02
GE699L-5605	2.10	0.09	1.14	5.50	-0.09	-0.26	22.00	0.89	0.60	22.45
H2FQTM-5601	1.98	-0.03	-0.34	5.41	-0.18	-0.52	21.47	0.36	0.24	21.47
H3VEP3-5605	2.00	-0.01	-0.09	5.20	-0.39	-1.13	22.60	1.49	1.01	22.62
H9BQ9E-5605	2.03	0.02	0.28	5.53	-0.06	-0.17	21.50	0.39	0.26	21.54
HFFF2F-5605	1.55	-0.46	-5.65 X	4.44	-1.15	-3.35 X	20.43	-0.68	-0.47	20.43
HGPF7M-5601	1.90	-0.11	-1.33	5.10	-0.49	-1.42	21.87	0.76	0.52	21.87
HJF6N3-5605	2.10	0.09	1.14	5.70	0.11	0.32	22.00	0.89	0.60	21.62
HKBMP4-5605	2.00	-0.01	-0.09	5.60	0.01	0.03	20.92	-0.19	-0.13	20.92
HYL3BQ-5601	2.00	-0.01	-0.09	5.10	-0.49	-1.42	23.10	1.99	1.35	23.09
JFEXMH-5605	2.00	-0.01	-0.09	5.80	0.21	0.61	20.30	-0.81	-0.55	20.17
JQDTKD-5605	2.05	0.04	0.52	5.53	-0.06	-0.17	21.80	0.69	0.47	21.76
JUC4GD-5605	2.10	0.09	1.14	5.54	-0.05	-0.14	22.28	1.17	0.80	22.28
JWYNLG-5605	2.00	-0.01	-0.09	6.00	0.41	1.20	19.50	-1.61	-1.10	19.47

TABLE 1

Stain D - Preparation Angle: 21°, continued

WebCode-Test	Width			Length			Angle			CalcAng
	mm*	Diff	CPV	mm*	Diff	CPV	Deg.	Diff	CPV	
K7GMQR-5605	2.10	0.09	1.14	5.50	-0.09	-0.26	22.00	0.89	0.60	22.45
K7GUND-5605	1.50	-0.51	-6.27 X	4.30	-1.29	-3.75 X	20.41	-0.70	-0.48	20.42
K8C6RT-5605	2.00	-0.01	-0.09	5.90	0.31	0.90	20.20	-0.91	-0.62	19.81
KLXKVT-5605	2.10	0.09	1.14	5.70	0.11	0.32	22.00	0.89	0.60	21.62
KPWWQR-5601	2.00	-0.01	-0.09	6.00	0.41	1.20	19.47	-1.64	-1.12	19.47
LAZY4M-5605	2.00	-0.01	-0.09	5.60	0.01	0.03	20.55	-0.56	-0.38	20.92
LKHFYF-5605	2.00	-0.01	-0.09	5.40	-0.19	-0.55	21.74	0.63	0.43	21.74
LKJYWX-5605	2.04	0.03	0.40	5.40	-0.19	-0.55	22.20	1.09	0.74	22.20
LLN6WH-5605	1.80	-0.21	-2.57	4.70	-0.89	-2.59	22.50	1.39	0.95	22.52
LTQCGR-5605	2.10	0.09	1.14	5.90	0.31	0.90	21.00	-0.11	-0.08	20.85
M3RY4H-5605	2.00	-0.01	-0.09	5.30	-0.29	-0.84	22.00	0.89	0.60	22.17
M6YCRB-5605	1.95	-0.06	-0.71	5.68	0.09	0.26	20.20	-0.91	-0.62	20.08
MNCWNE-5605	2.10	0.09	1.14	5.90	0.31	0.90	20.90	-0.21	-0.14	20.85
MTQJED-5605	1.80	-0.21	-2.57	5.50	-0.09	-0.26	19.10	-2.01	-1.37	19.10
N8JN4L-5601	1.80	-0.21	-2.57	5.45	-0.14	-0.41	19.28	-1.83	-1.25	19.29
N9DCMG-5605	2.00	-0.01	-0.09	5.80	0.21	0.61	20.17	-0.94	-0.64	20.17
NB4FBH-5601	2.00	-0.01	-0.09	6.00	0.41	1.20	19.47	-1.64	-1.12	19.47
NP2PYN-5605	2.10	0.09	1.14	5.50	-0.09	-0.26	22.00	0.89	0.60	22.45
NT2TQB-5605	1.26	-0.75	-9.24 X	3.49	-2.10	-6.11 X	21.20	0.09	0.06	21.16
P82WTF-5605	2.00	-0.01	-0.09	5.20	-0.39	-1.13	22.62	1.51	1.03	22.62

TABLE 1

Stain D - Preparation Angle: 21°, continued

WebCode-Test	Width			Length			Angle			CalcAng
	mm*	Diff	CPV	mm*	Diff	CPV	Deg.	Diff	CPV	
PB2NWU-5605	2.00	-0.01	-0.09	5.80	0.21	0.61	20.00	-1.11	-0.76	20.17
PF8YRL-5601	1.88	-0.13	-1.58	5.50	-0.09	-0.26	20.00	-1.11	-0.76	19.99
PFWHUV-5605	1.83	-0.18	-2.19	5.49	-0.10	-0.29	19.50	-1.61	-1.10	19.47
PPU3UE-5605	2.00	-0.01	-0.09	6.00	0.41	1.20	19.00	-2.11	-1.44	19.47
PTGXXU-5605	2.10	0.09	1.14	5.80	0.21	0.61	21.00	-0.11	-0.08	21.23
Q9NVJJ-5605	2.00	-0.01	-0.09	5.00	-0.59	-1.72	23.60	2.49	1.69	23.58
QA3HV7-5605	2.13	0.12	1.51	5.49	-0.10	-0.29	22.80	1.69	1.15	22.83
QAM2ZD-5605	2.23	0.22	2.75	5.78	0.19	0.55	22.70	1.59	1.08	22.69
QEFL2V-5605	2.20	0.19	2.38	6.00	0.41	1.20	21.50	0.39	0.26	21.51
QM9BMJ-5601	2.30	0.29	3.61 X	5.60	0.01	0.03	24.20	3.09	2.10	24.25
QQ9LJJ-5601	2.00	-0.01	-0.09	5.50	-0.09	-0.26	21.00	-0.11	-0.08	21.32
QRKJQ9-5605	2.00	-0.01	-0.09	6.00	0.41	1.20	20.00	-1.11	-0.76	19.47
RNDKU7-5605	50.30	48.29	596.5 X	131.90	126.31	367.7 X	22.40	1.29	0.88	22.42
RQ4LXA-5605	2.00	-0.01	-0.09	5.30	-0.29	-0.84	22.17	1.06	0.72	22.17
RRY6ZB-5605	2.00	-0.01	-0.09	6.10	0.51	1.49	19.14	-1.97	-1.34	19.14
RTR2MJ-5605	2.00	-0.01	-0.09	5.50	-0.09	-0.26	21.30	0.19	0.13	21.32
RU239H-5601	2.10	0.09	1.14	5.90	0.31	0.90	20.90	-0.21	-0.14	20.85
RXMUFE-5605	2.10	0.09	1.14	5.81	0.22	0.64	21.00	-0.11	-0.08	21.19
RZ9UD9-5605	2.10	0.09	1.14	5.90	0.31	0.90	20.30	-0.81	-0.55	20.85
T3FWYR-5605	2.00	-0.01	-0.09	5.50	-0.09	-0.26	21.30	0.19	0.13	21.32

TABLE 1

Stain D - Preparation Angle: 21°, continued

WebCode-Test	Width			Length			Angle			CalcAng
	mm*	Diff	CPV	mm*	Diff	CPV	Deg.	Diff	CPV	
T3PKXB-5605	2.00	-0.01	-0.09	5.60	0.01	0.03	20.90	-0.21	-0.14	20.92
T3VUUG-5601	2.00	-0.01	-0.09	5.60	0.01	0.03	21.00	-0.11	-0.08	20.92
T7A7A7-5605	0.54	-1.47	-18.13 X	1.50	-4.09	-11.90 X	21.10	-0.01	-0.01	21.10
TG7HY6-5605	1.50	-0.51	-6.27 X	4.00	-1.59	-4.63 X	22.00	0.89	0.60	22.02
TJ3U3K-5605	2.00	-0.01	-0.09	5.60	0.01	0.03	20.90	-0.21	-0.14	20.92
U7NWTA-5605	2.00	-0.01	-0.09	5.90	0.31	0.90	19.80	-1.31	-0.89	19.81
UQBPE6-5601	2.00	-0.01	-0.09	6.00	0.41	1.20	19.50	-1.61	-1.10	19.47
VA9NJQ-5605	2.10	0.09	1.14	6.20	0.61	1.78	19.80	-1.31	-0.89	19.80
VBHCJA-5605	2.08	0.07	0.89	5.57	-0.02	-0.06	21.95	0.84	0.57	21.93
WLWPF4-5605	2.08	0.07	0.89	6.05	0.46	1.34	20.00	-1.11	-0.76	20.11
X67L9L-5605	2.05	0.04	0.52	5.86	0.27	0.79	20.00	-1.11	-0.76	20.48
X7DK38-5605	2.00	-0.01	-0.09	6.00	0.41	1.20	19.50	-1.61	-1.10	19.47
XEPFMG-5605	2.00	-0.01	-0.09	5.70	0.11	0.32	20.50	-0.61	-0.42	20.54
XRYFXZ-5605	1.20	-0.81	-9.98 X	3.29	-2.30	-6.69 X	21.40	0.29	0.20	21.39
Y4QPFM-5605	2.10	0.09	1.14	5.70	0.11	0.32	21.60	0.49	0.33	21.62
YFGZN7-5605	2.00	-0.01	-0.09	5.50	-0.09	-0.26	21.32	0.21	0.14	21.32
YKCPC6-5605	2.00	-0.01	-0.09	5.50	-0.09	-0.26	21.30	0.19	0.13	21.32
YKDKUB-5605	2.00	-0.01	-0.09	5.90	0.31	0.90	19.80	-1.31	-0.89	19.81
YUGWQ6-5605	2.04	0.03	0.40	5.75	0.16	0.47	20.78	-0.33	-0.23	20.78
Z8ZN8Y-5605	1.84	-0.17	-2.07	5.00	-0.59	-1.72	21.59	0.48	0.33	21.59

TABLE 1

Stain D - Preparation Angle: 21°, continued

WebCode-Test	Width			Length			Angle			CalcAng
	mm*	Diff	CPV	mm*	Diff	CPV	Deg.	Diff	CPV	
ZB6A3C-5605	2.00	-0.01	-0.09	5.80	0.21	0.61	20.00	-1.11	-0.76	20.17
ZE6KU6-5605	2.00	-0.01	-0.09	6.00	0.41	1.20	19.47	-1.64	-1.12	19.47
ZQYUJZ-5605	4.00	1.99	24.61 X	11.32	5.73	16.68 X	20.70	-0.41	-0.28	20.69
ZRQEKK-5601	2.00	-0.01	-0.09	5.20	-0.39	-1.13	22.62	1.51	1.03	22.62
ZTM99A-5601	2.00	-0.01	-0.09	5.87	0.28	0.82	19.90	-1.21	-0.83	19.92

Summary Statistics for Stain D - Preparation Angle: 21°

	Width (mm*)	Length (mm*)	Angle°	CalcAng°
Grand Mean	2.01	5.59	21.11	21.12
Standard Deviation	0.08	0.34	1.47	1.49
Participants Included in calculations	120	126	144	144
Participants excluded from calculations (indicated by X)	25	19	1	0

**Statistical evaluation for length/width measurements includes those who did not report in mm, which may result in a higher number of participants excluded from these calculations. This difference in measurement unit has no effect on the statistical evaluation of the Angle° or CalcAng° data.*

TABLE 1

Stain E - Preparation Angle: 14°

WebCode-Test	Width			Length			Angle			CalcAng
	mm*	Diff	CPV	mm*	Diff	CPV	Deg.	Diff	CPV	
37ZJPV-5605	1.98	0.47	2.68	7.38	1.53	4.77 X	15.60	0.36	0.31	15.56
39NDLJ-5605	1.30	-0.21	-1.18	5.90	0.05	0.16	12.72	-2.52	-2.14	12.73
3WDMLA-5605	1.60	0.09	0.52	6.30	0.45	1.40	15.00	-0.24	-0.20	14.71
3ZYPQG-5605	1.40	-0.11	-0.62	5.60	-0.25	-0.78	14.50	-0.74	-0.63	14.48
43EXDZ-5605	1.50	-0.01	-0.05	5.60	-0.25	-0.78	15.53	0.29	0.25	15.54
47HU2A-5605	1.60	0.09	0.52	5.60	-0.25	-0.78	16.30	1.06	0.90	16.60
4JLDEU-5605	0.69	-0.82	-4.65 X	2.62	-3.23	-10.06X	15.30	0.06	0.05	15.27
4LCEHW-5601	1.50	-0.01	-0.05	6.20	0.35	1.09	14.21	-1.03	-0.87	14.00
63CQQX-5605	1.60	0.09	0.52	5.40	-0.45	-1.40	17.00	1.76	1.50	17.24
644UBT-5605	1.70	0.19	1.09	5.80	-0.05	-0.16	17.00	1.76	1.50	17.04
664MD8-5601	1.59	0.08	0.46	5.96	0.11	0.34	15.47	0.23	0.20	15.47
67B7WZ-5605	1.57	0.06	0.35	5.64	-0.21	-0.66	16.00	0.76	0.65	16.16
6AAHTZ-5601	1.20	-0.31	-1.75	6.10	0.25	0.78	11.30	-3.94	-3.35 X	11.35 X
6MXKEY-5601	1.20	-0.31	-1.75	5.30	-0.55	-1.71	13.09	-2.15	-1.83	13.09
6RPRT2-5605	1.30	-0.21	-1.18	4.40	-1.45	-4.52 X	17.20	1.96	1.67	17.18
6RU9RZ-5605	23.81	22.30	126.6X	91.79	85.94	267.8X	15.03	-0.21	-0.18	15.03
6U2N6X-5605	1.50	-0.01	-0.05	6.10	0.25	0.78	14.20	-1.04	-0.88	14.24
6YUNJT-5605	1.60	0.09	0.52	5.80	-0.05	-0.16	16.00	0.76	0.65	16.01
7D4YHY-5605	1.20	-0.31	-1.75	6.10	0.25	0.78	11.00	-4.24	-3.60 X	11.35 X
7PJLXR-5601	1.50	-0.01	-0.05	5.60	-0.25	-0.78	15.54	0.30	0.26	15.54

TABLE 1

Stain E - Preparation Angle: 14°, continued

WebCode-Test	Width			Length			Angle			CalcAng
	mm*	Diff	CPV	mm*	Diff	CPV	Deg.	Diff	CPV	
7TJ4PR-5601	1.50	-0.01	-0.05	6.30	0.45	1.40	13.77	-1.47	-1.25	13.77
7UEFT9-5605	1.50	-0.01	-0.05	5.60	-0.25	-0.78	15.40	0.16	0.14	15.54
83LJBQ-5605	1.03	-0.48	-2.72	4.77	-1.08	-3.37 X	12.00	-3.24	-2.75	12.47
89VTLT-5605	1.40	-0.11	-0.62	5.70	-0.15	-0.47	14.20	-1.04	-0.88	14.22
9BDCZW-5605	1.60	0.09	0.52	6.10	0.25	0.78	15.20	-0.04	-0.03	15.21
9HCYW3-5601	1.42	-0.09	-0.50	5.63	-0.22	-0.69	14.61	-0.63	-0.53	14.61
9JNDLW-5605	1.50	-0.01	-0.05	5.70	-0.15	-0.47	15.00	-0.24	-0.20	15.26
9LBAR3-5601	1.44	-0.07	-0.39	5.66	-0.19	-0.59	15.00	-0.24	-0.20	14.74
9XNDDZ-5605	1.50	-0.01	-0.05	5.25	-0.60	-1.87	16.60	1.36	1.16	16.60
9YXGP3-5605	1.60	0.09	0.52	6.00	0.15	0.47	15.00	-0.24	-0.20	15.47
A4QQQN-5605	1.70	0.19	1.09	4.01	-1.84	-5.73 X	25.00	9.76	8.30 X	25.08 X
AF2CXN-5601	1.60	0.09	0.52	5.70	-0.15	-0.47	16.30	1.06	0.90	16.30
AXL3WM-5605	1.48	-0.03	-0.16	5.91	0.06	0.19	14.50	-0.74	-0.63	14.50
AYFDRA-5605	1.60	0.09	0.52	6.30	0.45	1.40	14.70	-0.54	-0.46	14.71
AYXNMP-5605	1.16	-0.35	-1.98	5.00	-0.85	-2.65	33.00	17.76	15.10X	13.41
B2KKTU-5605	2.00	0.49	2.79	8.00	2.15	6.70 X	14.50	-0.74	-0.63	14.48
B3DTHP-5605	2.00	0.49	2.79	6.00	0.15	0.47	19.00	3.76	3.20 X	19.47 X
B78MFQ-5605	1.40	-0.11	-0.62	5.60	-0.25	-0.78	14.00	-1.24	-1.05	14.48
BDQTCX-5605	1.50	-0.01	-0.05	5.90	0.05	0.16	14.70	-0.54	-0.46	14.73
BFJ8YA-5601	1.50	-0.01	-0.05	6.00	0.15	0.47	14.48	-0.76	-0.64	14.48

TABLE 1

Stain E - Preparation Angle: 14°, continued

WebCode-Test	Width			Length			Angle			CalcAng
	mm*	Diff	CPV	mm*	Diff	CPV	Deg.	Diff	CPV	
BFKGVT-5605	1.50	-0.01	-0.05	5.50	-0.35	-1.09	15.00	-0.24	-0.20	15.83
BNREEP-5605	1.48	-0.03	-0.16	6.18	0.33	1.03	15.40	0.16	0.14	13.86
BP6XFM-5605	1.70	0.19	1.09	4.01	-1.84	-5.73 X	25.00	9.76	8.30 X	25.08 X
C2W2ZR-5605	6.07	4.56	25.90 X	1.52	-4.33	-13.49 X	14.55	-0.69	-0.59	
C4L4BM-5605	1.78	0.27	1.54	6.52	0.67	2.09	15.80	0.56	0.48	15.84
C6W6UZ-5601	1.60	0.09	0.52	5.70	-0.15	-0.47	16.30	1.06	0.90	16.30
CJZALL-5605	1.47	-0.04	-0.22	5.49	-0.36	-1.12	15.50	0.26	0.22	15.53
CMF4ZX-5601	1.50	-0.01	-0.05	6.10	0.25	0.78	14.20	-1.04	-0.88	14.24
CPZV8U-5605	1.50	-0.01	-0.05	6.00	0.15	0.47	14.48	-0.76	-0.64	14.48
CVP7LY-5605	1.49	-0.02	-0.10	5.60	-0.25	-0.78	15.40	0.16	0.14	15.43
CWXPZL-5605	1.50	-0.01	-0.05	4.00	-1.85	-5.76 X	22.00	6.76	5.75 X	22.02 X
D44ZB9-5605	1.70	0.19	1.09	5.70	-0.15	-0.47	17.00	1.76	1.50	17.35
DLXRW7-5605	1.50	-0.01	-0.05	5.70	-0.15	-0.47	15.00	-0.24	-0.20	15.26
DUTXP8-5605	1.00	-0.51	-2.89	6.00	0.15	0.47	9.60	-5.64	-4.79 X	9.59 X
DXBCHZ-5605	1.50	-0.01	-0.05	6.00	0.15	0.47	14.00	-1.24	-1.05	14.48
EBULCJ-5605	1.14	-0.37	-2.09	3.88	-1.97	-6.14 X	17.08	1.84	1.57	17.09
EC6G3H-5605	1.59	0.08	0.46	5.93	0.08	0.25	15.60	0.36	0.31	15.55
EFQZ8L-5605	1.57	0.06	0.35	5.37	-0.48	-1.50	17.00	1.76	1.50	17.00
EGMJAM-5605	1.00	-0.51	-2.89	5.50	-0.35	-1.09	10.00	-5.24	-4.45 X	10.48 X
EJ6MXK-5605	1.08	-0.43	-2.43	4.62	-1.23	-3.83 X	13.52	-1.72	-1.46	13.52

TABLE 1

Stain E - Preparation Angle: 14°, continued

WebCode-Test	Width			Length			Angle			CalcAng
	mm*	Diff	CPV	mm*	Diff	CPV	Deg.	Diff	CPV	
EZA8GU-5601	1.60	0.09	0.52	5.80	-0.05	-0.16	16.00	0.76	0.65	16.01
F7FYLK-5605	1.80	0.29	1.66	6.20	0.35	1.09	16.90	1.66	1.41	16.88
F8P9CW-5605	1.40	-0.11	-0.62	5.80	-0.05	-0.16	14.00	-1.24	-1.05	13.97
FAWNKN-5605	4.50	2.99	16.99 X	15.00	9.15	28.51 X	17.40	2.16	1.84	17.46
FVC9HN-5605	1.60	0.09	0.52	5.70	-0.15	-0.47	16.30	1.06	0.90	16.30
G22U6G-5601	1.50	-0.01	-0.05	6.30	0.45	1.40	13.80	-1.44	-1.22	13.77
GDWYGN-5605	1.60	0.09	0.52	6.10	0.25	0.78	15.20	-0.04	-0.03	15.21
GE699L-5605	1.50	-0.01	-0.05	5.10	-0.75	-2.34	17.00	1.76	1.50	17.10
H2FQTM-5601	1.50	-0.01	-0.05	5.70	-0.15	-0.47	15.26	0.02	0.02	15.26
H3VEP3-5605	1.60	0.09	0.52	5.60	-0.25	-0.78	16.60	1.36	1.16	16.60
H9BQ9E-5605	1.55	0.04	0.24	5.84	-0.01	-0.03	15.40	0.16	0.14	15.39
HFFF2F-5605	1.34	-0.17	-0.96	4.62	-1.23	-3.83 X	16.86	1.62	1.38	16.86
HGPF7M-5601	1.50	-0.01	-0.05	5.70	-0.15	-0.47	15.28	0.04	0.04	15.26
HJF6N3-5605	1.60	0.09	0.52	5.80	-0.05	-0.16	16.00	0.76	0.65	16.01
HKBMP4-5605	1.60	0.09	0.52	5.90	0.05	0.16	15.73	0.49	0.42	15.73
HYL3BQ-5601	1.60	0.09	0.52	5.00	-0.85	-2.65	18.70	3.46	2.94	18.66
JFEXMH-5605	1.50	-0.01	-0.05	5.80	-0.05	-0.16	15.40	0.16	0.14	14.99
JQDTKD-5605	1.55	0.04	0.24	5.56	-0.29	-0.90	16.20	0.96	0.82	16.19
JUC4GD-5605	1.68	0.17	0.97	5.77	-0.08	-0.25	16.93	1.69	1.44	16.93
JWYNLG-5605	1.50	-0.01	-0.05	6.00	0.15	0.47	14.50	-0.74	-0.63	14.48

TABLE 1

Stain E - Preparation Angle: 14°, continued

WebCode-Test	Width			Length			Angle			CalcAng
	mm*	Diff	CPV	mm*	Diff	CPV	Deg.	Diff	CPV	
K7GMQR-5605	1.60	0.09	0.52	5.80	-0.05	-0.16	16.00	0.76	0.65	16.01
K7GUND-5605	1.12	-0.39	-2.21	4.33	-1.52	-4.74 X	14.99	-0.25	-0.21	14.99
K8C6RT-5605	1.50	-0.01	-0.05	6.00	0.15	0.47	14.30	-0.94	-0.80	14.48
KLXKVT-5605	1.60	0.09	0.52	6.00	0.15	0.47	15.00	-0.24	-0.20	15.47
KPWWQR-5601	1.50	-0.01	-0.05	6.00	0.15	0.47	14.48	-0.76	-0.64	14.48
LAZY4M-5605	1.50	-0.01	-0.05	6.00	0.15	0.47	14.28	-0.96	-0.81	14.48
LKHFYF-5605	1.60	0.09	0.52	6.00	0.15	0.47	15.47	0.23	0.20	15.47
LKJYWX-5605	1.55	0.04	0.24	5.90	0.05	0.16	15.23	-0.01	-0.01	15.23
LLN6WH-5605	1.40	-0.11	-0.62	4.60	-1.25	-3.90 X	17.70	2.46	2.09	17.72
LTQCGR-5605	1.50	-0.01	-0.05	6.40	0.55	1.71	14.00	-1.24	-1.05	13.55
M3RY4H-5605	1.50	-0.01	-0.05	5.50	-0.35	-1.09	16.00	0.76	0.65	15.83
M6YCRB-5605	1.49	-0.02	-0.10	5.89	0.04	0.12	14.70	-0.54	-0.46	14.65
MNCWNE-5605	1.70	0.19	1.09	6.40	0.55	1.71	15.90	0.66	0.56	15.40
MTQJED-5605	1.30	-0.21	-1.18	6.00	0.15	0.47	12.50	-2.74	-2.33	12.51
N8JN4L-5601	1.50	-0.01	-0.05	5.60	-0.25	-0.78	15.50	0.26	0.22	15.54
N9DCMG-5605	1.50	-0.01	-0.05	6.00	0.15	0.47	14.48	-0.76	-0.64	14.48
NB4FBH-5601	1.40	-0.11	-0.62	6.40	0.55	1.71	12.63	-2.61	-2.22	12.64
NP2PYN-5605	1.50	-0.01	-0.05	5.70	-0.15	-0.47	15.00	-0.24	-0.20	15.26
NT2TQB-5605	0.99	-0.52	-2.94	3.70	-2.15	-6.70 X	15.50	0.26	0.22	15.52
P82WTF-5605	1.60	0.09	0.52	5.70	-0.15	-0.47	16.30	1.06	0.90	16.30

TABLE 1

Stain E - Preparation Angle: 14°, continued

WebCode-Test	Width			Length			Angle			CalcAng
	mm*	Diff	CPV	mm*	Diff	CPV	Deg.	Diff	CPV	
PB2NWU-5605	1.50	-0.01	-0.05	6.10	0.25	0.78	14.00	-1.24	-1.05	14.24
PF8YRL-5601	1.37	-0.14	-0.79	5.63	-0.22	-0.69	14.00	-1.24	-1.05	14.08
PFWHUV-5605	1.33	-0.18	-1.01	5.83	-0.02	-0.06	13.19	-2.05	-1.74	13.19
PPU3UE-5605	1.70	0.19	1.09	6.30	0.45	1.40	15.00	-0.24	-0.20	15.65
PTGXXU-5605	1.50	-0.01	-0.05	6.40	0.55	1.71	14.00	-1.24	-1.05	13.55
Q9NVJJ-5605	1.50	-0.01	-0.05	6.00	0.15	0.47	14.50	-0.74	-0.63	14.48
QA3HV7-5605	1.57	0.06	0.35	5.69	-0.16	-0.50	16.00	0.76	0.65	16.02
QAM2ZD-5605	1.76	0.25	1.43	6.05	0.20	0.62	17.00	1.76	1.50	16.91
QEFL2V-5605	1.50	-0.01	-0.05	5.00	-0.85	-2.65	17.50	2.26	1.92	17.46
QM9BMJ-5601	1.90	0.39	2.22	5.50	-0.35	-1.09	20.20	4.96	4.22 X	20.21 X
QQ9LJJ-5601	1.50	-0.01	-0.05	5.00	-0.85	-2.65	17.00	1.76	1.50	17.46
QRKJQ9-5605	1.60	0.09	0.52	6.10	0.25	0.78	15.00	-0.24	-0.20	15.21
RNDKU7-5605	41.60	40.09	227.7 X	147.50	141.65	441.3 X	16.40	1.16	0.99	16.38
RQ4LXA-5605	1.50	-0.01	-0.05	5.40	-0.45	-1.40	16.13	0.89	0.76	16.13
RRY6ZB-5605	1.50	-0.01	-0.05	6.40	0.55	1.71	13.56	-1.68	-1.43	13.55
RTR2MJ-5605	1.60	0.09	0.52	5.80	-0.05	-0.16	16.00	0.76	0.65	16.01
RU239H-5601	1.70	0.19	1.09	6.30	0.45	1.40	15.70	0.46	0.39	15.65
RXMUFE-5605	1.69	0.18	1.03	6.00	0.15	0.47	16.00	0.76	0.65	16.36
RZ9UD9-5605	1.60	0.09	0.52	5.90	0.05	0.16	15.50	0.26	0.22	15.73
T3FWYR-5605	1.50	-0.01	-0.05	5.10	-0.75	-2.34	17.10	1.86	1.58	17.10

TABLE 1

Stain E - Preparation Angle: 14°, continued

WebCode-Test	Width			Length			Angle			CalcAng
	mm*	Diff	CPV	mm*	Diff	CPV	Deg.	Diff	CPV	
T3PKXB-5605	1.50	-0.01	-0.05	5.90	0.05	0.16	14.70	-0.54	-0.46	14.73
T3VUUG-5601	1.50	-0.01	-0.05	5.70	-0.15	-0.47	16.00	0.76	0.65	15.26
T7A7A7-5605	0.41	-1.10	-6.24 X	1.52	-4.33	-13.49X	15.60	0.36	0.31	15.65
TG7HY6-5605	1.00	-0.51	-2.89	4.00	-1.85	-5.76 X	14.00	-1.24	-1.05	14.48
TJ3U3K-5605	1.50	-0.01	-0.05	5.80	-0.05	-0.16	15.00	-0.24	-0.20	14.99
U7NWTA-5605	1.40	-0.11	-0.62	5.90	0.05	0.16	13.70	-1.54	-1.31	13.73
UQBPE6-5601	1.60	0.09	0.52	6.40	0.55	1.71	14.50	-0.74	-0.63	14.48
VA9NJQ-5605	1.60	0.09	0.52	6.10	0.25	0.78	15.21	-0.03	-0.02	15.21
VBHCJA-5605	1.57	0.06	0.35	5.95	0.10	0.31	15.31	0.07	0.06	15.30
WLWPF4-5605	1.55	0.04	0.24	6.07	0.22	0.68	15.00	-0.24	-0.20	14.79
X67L9L-5605	1.58	0.07	0.41	6.06	0.21	0.65	15.00	-0.24	-0.20	15.11
X7DK38-5605	1.50	-0.01	-0.05	6.00	0.15	0.47	14.50	-0.74	-0.63	14.48
XEPFMG-5605	1.60	0.09	0.52	6.00	0.15	0.47	15.50	0.26	0.22	15.47
XRYFXZ-5605	0.77	-0.74	-4.19 X	2.88	-2.97	-9.25 X	15.80	0.56	0.48	15.51
Y4QPFM-5605	1.40	-0.11	-0.62	6.20	0.35	1.09	13.00	-2.24	-1.90	13.05
YFGZN7-5605	1.30	-0.21	-1.18	6.00	0.15	0.47	12.51	-2.73	-2.32	12.51
YKCPC6-5605	1.60	0.09	0.52	5.90	0.05	0.16	15.70	0.46	0.39	15.73
YKDKUB-5605	1.60	0.09	0.52	6.10	0.25	0.78	15.20	-0.04	-0.03	15.21
YUGWQ6-5605	1.57	0.06	0.35	6.02	0.17	0.53	15.12	-0.12	-0.10	15.12
Z8ZN8Y-5605	1.50	-0.01	-0.05	5.51	-0.34	-1.06	15.80	0.56	0.48	15.80

TABLE 1

Stain E - Preparation Angle: 14°, continued

WebCode-Test	Width			Length			Angle			CalcAng
	mm*	Diff	CPV	mm*	Diff	CPV	Deg.	Diff	CPV	
ZB6A3C-5605	1.50	-0.01	-0.05	6.20	0.35	1.09	14.00	-1.24	-1.05	14.00
ZE6KU6-5605	1.50	-0.01	-0.05	6.00	0.15	0.47	14.47	-0.77	-0.65	14.48
ZQYUJZ-5605	3.05	1.54	8.75 X	11.69	5.84	18.19X	15.10	-0.14	-0.12	15.12
ZRQEKK-5601	1.60	0.09	0.52	5.80	-0.05	-0.16	16.01	0.77	0.66	16.01
ZTM99A-5601	1.62	0.11	0.63	5.87	0.02	0.06	16.00	0.76	0.65	16.02

Summary Statistics for Stain E - Preparation Angle: 14°

	Width (mm*)	Length (mm*)	Angle°	CalcAng°
Grand Mean	1.51	5.85	15.24	15.25
Standard Deviation	0.18	0.32	1.18	1.19
Participants Included in calculations	137	123	135	135
Participants excluded from calculations (indicated by X)	8	22	10	9

**Statistical evaluation for length/width measurements includes those who did not report in mm, which may result in a higher number of participants excluded from these calculations. This difference in measurement unit has no effect on the statistical evaluation of the Angle° or CalcAng° data.*

Pattern Description, Part 1

For each of the following patterns, indicate the single pattern type that best describes the image.

TABLE 2: Single Pattern Recognition

Item 2

WebCode-Test	Pattern Type
22BJVA-5605	Saturation Stain
298GHC-5601	Saturation Stain
37ZJPV-5605	Saturation Stain
39NDLJ-5605	Saturation Stain
3GZ94C-5601	Saturation Stain
3WDMLA-5605	Saturation Stain
3ZYPQG-5605	Pool Saturation Stain
43EXDZ-5605	Saturation Stain
47HU2A-5605	Saturation Stain
4JLDEU-5605	Saturation Stain
4LCEHW-5601	Saturation Stain
63CQQX-5605	Saturation Stain
644UBT-5605	Saturation Stain Transfer Stain
664MD8-5601	Saturation Stain
67B7WZ-5605	Saturation Stain
6AAHTZ-5601	Saturation Stain
6MXKEY-5601	Saturation Stain
6RPRT2-5605	Saturation Stain
6RU9RZ-5605	Saturation Stain
6U2N6X-5605	Saturation Stain
6YUNJT-5605	Saturation Stain
7D4YHY-5605	Saturation Stain
7PJLXR-5601	Saturation Stain
7TJ4PR-5601	Saturation Stain
7UEFT9-5605	Saturation Stain
7VAYVA-5601	Saturation Stain
83LJBQ-5605	Saturation Stain
89VTLT-5605	Saturation Stain
8K4D88-5605	Saturation Stain
94DPEN-5601	Saturation Stain
9BDCZW-5605	Saturation Stain
9HCYW3-5601	Saturation Stain
9JNDLW-5605	Saturation Stain
9LBAR3-5601	Saturation Stain
9XNDDZ-5605	Saturation Stain
9YXGP3-5605	Saturation Stain
A4QQQN-5605	Saturation Stain
AF2CXN-5601	Saturation Stain
AHB7UN-5605	Saturation Stain Transfer Stain
ALBGPN-5605	Saturation Stain
ARFDDU-5601	Saturation Stain
AXL3WM-5605	Saturation Stain
AYFDRA-5605	Saturation Stain
AYXNMP-5605	Drip Stain Saturation Stain
B2KKTU-5605	Saturation Stain
B3DTHP-5605	Saturation Stain
B78MFQ-5605	Saturation Stain
B7QG9N-5605	Saturation Stain
BDQTCX-5605	Saturation Stain
BFJ8YA-5601	Saturation Stain
BFKGVT-5605	Saturation Stain
BNREEP-5605	Saturation Stain

TABLE 2: Single Pattern Recognition
Item 2, continued

WebCode-Test	Pattern Type
BP6XFM-5605	Saturation Stain
C2W2ZR-5605	Saturation Stain
C4L4BM-5605	Saturation Stain
C6W6UZ-5601	Saturation Stain
CACDKK-5601	Saturation Stain
CJZALL-5605	Saturation Stain
CMF4ZX-5601	Saturation Stain
CPZV8U-5605	Saturation Stain
CVP7LY-5605	Saturation Stain
CWXPZL-5605	Saturation Stain
D44ZB9-5605	Saturation Stain
DFAM4H-5601	Saturation Stain
DGQLJ2-5601	Saturation Stain
DLXRW7-5605	Saturation Stain
DPKPPJ-5601	Saturation Stain
DUTXP8-5605	Saturation Stain
DXBCHZ-5605	Saturation Stain
DY7VK2-5601	Saturation Stain
EBULCJ-5605	Saturation Stain
EC6G3H-5605	Saturation Stain
EFQZ8L-5605	Saturation Stain
EGMJAM-5605	Saturation Stain
EJ6MXK-5605	Saturation Stain
EZA8GU-5601	Saturation Stain
F7FYLK-5605	Saturation Stain
F8P9CW-5605	Saturation Stain
FAWNKN-5605	Pool
	Saturation Stain
FVC9HN-5605	Saturation Stain
G22U6G-5601	Saturation Stain
GBM73F-5605	Saturation Stain
GDWYGN-5605	Saturation Stain
GE699L-5605	Saturation Stain
H2FQTM-5601	Saturation Stain
H3VEP3-5605	Saturation Stain
H9BQ9E-5605	Saturation Stain
HFFF2F-5605	Saturation Stain
HGPF7M-5601	Saturation Stain
HH2CCR-5601	Saturation Stain
HJF6N3-5605	Saturation Stain
HKBMP4-5605	Saturation Stain
HND44D-5601	Saturation Stain
HYL3BQ-5601	Saturation Stain
JBWVFC-5601	Saturation Stain
JEW9YV-5601	Saturation Stain
JFEXMH-5605	Saturation Stain
JQDTKD-5605	Saturation Stain
JTGLEC-5601	Saturation Stain
JUC4GD-5605	Saturation Stain
JWYNLG-5605	Saturation Stain
K7GMQR-5605	Saturation Stain
K7GUND-5605	Saturation Stain
K8C6RT-5605	Saturation Stain
KLXKVT-5605	Saturation Stain
KPWWQR-5601	Saturation Stain
KTUZGY-5605	Saturation Stain
	Transfer Stain
LAZY4M-5605	Saturation Stain
LKHFYF-5605	Saturation Stain
LKJYWX-5605	Saturation Stain

TABLE 2: Single Pattern Recognition
Item 2, continued

WebCode-Test	Pattern Type
LLN6WH-5605	Saturation Stain
LTQCGR-5605	Saturation Stain
M3RY4H-5605	Saturation Stain
M6YCRB-5605	Saturation Stain
MNCWNE-5605	Saturation Stain
MTQJED-5605	Saturation Stain
N8JN4L-5601	Saturation Stain
N9DCMG-5605	Saturation Stain
NB4FBH-5601	Saturation Stain
NP2PYN-5605	Saturation Stain
NT2TQB-5605	Saturation Stain
P2E897-5601	Saturation Stain
P73YA8-5605	Saturation Stain
P82WTF-5605	Saturation Stain
PB2NWU-5605	Drip Stain
	Saturation Stain
PF8YRL-5601	Saturation Stain
PFWHUV-5605	Saturation Stain
PLZ2VL-5605	Saturation Stain
PPU3UE-5605	Saturation Stain
PTGXXU-5605	Saturation Stain
Q9NVJJ-5605	Saturation Stain
QA3HV7-5605	Saturation Stain
QAM2ZD-5605	Saturation Stain
QEFL2V-5605	Saturation Stain
QM9BMJ-5601	Saturation Stain
QQ9LJJ-5601	Saturation Stain
QRKJQ9-5605	Saturation Stain
RL6F96-5605	Saturation Stain
RNDKU7-5605	Saturation Stain
RQ4LXA-5605	Saturation Stain
RRY6ZB-5605	Pool
	Saturation Stain
	Transfer Stain
RTR2MJ-5605	Saturation Stain
RU239H-5601	Saturation Stain
RXMUFE-5605	Saturation Stain
RZ9UD9-5605	Saturation Stain
T3FWYR-5605	Saturation Stain
T3PKXB-5605	Saturation Stain
T3VUUG-5601	Saturation Stain
T7A7A7-5605	Saturation Stain
TG7HY6-5605	Saturation Stain
TJ3U3K-5605	Saturation Stain
TJXC6L-5601	Saturation Stain
TNWLD3-5601	Saturation Stain
U38NAG-5601	Saturation Stain
U7NWTA-5605	Saturation Stain
UQBPE6-5601	Saturation Stain
UVQDX2-5601	Saturation Stain
VA9NJQ-5605	Saturation Stain
VBHCJA-5605	Saturation Stain
VZZT4J-5601	Saturation Stain
WLWPF4-5605	Saturation Stain
X67L9L-5605	Saturation Stain
X7DK38-5605	Saturation Stain
XEPFMG-5605	Saturation Stain
XRYFXZ-5605	Saturation Stain
Y4QPFM-5605	Saturation Stain
YFGZN7-5605	Saturation Stain

TABLE 2: Single Pattern Recognition
Item 2, continued

WebCode-Test	Pattern Type	WebCode-Test	Pattern Type
YKCPC6-5605	Saturation Stain		
YKDKUB-5605	Saturation Stain		
YUGWQ6-5605	Saturation Stain		
Z8ZN8Y-5605	Saturation Stain		
ZB6A3C-5605	Saturation Stain		
ZD93YV-5601	Saturation Stain		
ZE4L2W-5601	Saturation Stain		
ZE6KU6-5605	Saturation Stain		
ZQYUJZ-5605	Saturation Stain		
ZRQEKK-5601	Saturation Stain		
ZTM99A-5601	Saturation Stain		

Pattern Types Reported for Item 2
Participants: 178

Pattern Type	Percent Reported
Saturation Stain	178 (100.0%)
Transfer Stain	4 (2.2%)
Pool	3 (1.7%)
Drip Stain	2 (1.1%)

TABLE 2: Single Pattern Recognition
Item 3

WebCode-Test	Pattern Type
22BJVA-5605	Wipe
298GHC-5601	Wipe
37ZJPV-5605	Wipe
39NDLJ-5605	Swipe
3GZ94C-5601	Wipe
3WDMLA-5605	Wipe
3ZYPQG-5605	Wipe
43EXDZ-5605	Wipe
47HU2A-5605	Wipe
4JLDEU-5605	Wipe
4LCEHW-5601	Wipe
63CQQX-5605	Wipe
644UBT-5605	Drip Stain
	Wipe
664MD8-5601	Wipe
67B7WZ-5605	Wipe
6AAHTZ-5601	Wipe
6MXKEY-5601	Wipe
6RPRT2-5605	Wipe
6RU9RZ-5605	Wipe
6U2N6X-5605	Wipe
6YUNJT-5605	Wipe
7D4YHY-5605	Wipe
7PJLXR-5601	Wipe
7TJ4PR-5601	Wipe
7UEFT9-5605	Wipe
7VAYVA-5601	Wipe
83LJBQ-5605	Wipe
89VTLT-5605	Wipe
8K4D88-5605	Wipe
94DPEN-5601	Wipe
9BDCZW-5605	Wipe
9HCYW3-5601	Wipe
9JNDLW-5605	Wipe
9LBAR3-5601	Wipe
9XNDDZ-5605	Wipe
9YXGP3-5605	Wipe
A4QQQN-5605	Wipe
AF2CXN-5601	Wipe
AHB7UN-5605	Pool
	Wipe
ALBGPN-5605	Drip Stain
	Wipe
ARFDDU-5601	Wipe
AXL3WM-5605	Wipe
AYFDRA-5605	Wipe
AYXNMP-5605	Wipe
B2KKTU-5605	Wipe
B3DTHP-5605	Wipe
B78MFQ-5605	Wipe
B7QG9N-5605	Drip Pattern
	Wipe
BDQTCX-5605	Wipe
BFJ8YA-5601	Transfer Stain
	Wipe
BFKGVT-5605	Drip Stain
	Wipe
BNREEP-5605	Wipe
BP6XFM-5605	Wipe
C2W2ZR-5605	Wipe

TABLE 2: Single Pattern Recognition
Item 3, continued

WebCode-Test	Pattern Type
C4L4BM-5605	Wipe
C6W6UZ-5601	Wipe
CACDKK-5601	Wipe
CJZALL-5605	Wipe
CMF4ZX-5601	Wipe
CPZV8U-5605	Wipe
CVP7LY-5605	Wipe
CWXPZL-5605	Wipe
D44ZB9-5605	Wipe
DFAM4H-5601	Wipe
DGQLJ2-5601	Wipe
DLXRW7-5605	Wipe
DPKPPJ-5601	Wipe
DUTXP8-5605	Wipe
DXBCHZ-5605	Wipe
DY7VK2-5601	Wipe
EBULCJ-5605	Wipe
EC6G3H-5605	Wipe
EFQZ8L-5605	Wipe
EGMJAM-5605	Drip Stain
	Wipe
EJ6MXK-5605	Drip Stain
	Wipe
EZA8GU-5601	Wipe
F7FYLK-5605	Wipe
F8P9CW-5605	Wipe
FAWNKN-5605	Wipe
FVC9HN-5605	Wipe
G22U6G-5601	Wipe
GBM73F-5605	Wipe
GDWYGN-5605	Wipe
GE699L-5605	Wipe
H2FQTM-5601	Wipe
H3VEP3-5605	Wipe
H9BQ9E-5605	Wipe
HFFF2F-5605	Wipe
HGPF7M-5601	Wipe
HH2CCR-5601	Wipe
HJF6N3-5605	Wipe
HKBMP4-5605	Wipe
HND44D-5601	Wipe
HYL3BQ-5601	Wipe
JBWVFC-5601	Wipe
JEW9YV-5601	Wipe
JFEXMH-5605	Wipe
JQDTKD-5605	Wipe
JTGLEC-5601	Wipe
JUC4GD-5605	Drip Stain
	Wipe
JWYNLG-5605	Wipe
K7GMQR-5605	Wipe
K7GUND-5605	Wipe
K8C6RT-5605	Wipe
KLXKVT-5605	Wipe
KPWWQR-5601	Wipe
KTUZGY-5605	Wipe
LAZY4M-5605	Wipe
LKHFYF-5605	Wipe
LKJYWX-5605	Wipe
LLN6WH-5605	Wipe

TABLE 2: Single Pattern Recognition
Item 3, continued

WebCode-Test	Pattern Type
LTQCGR-5605	Wipe
M3RY4H-5605	Wipe
M6YCRB-5605	Wipe
MNCWNE-5605	Wipe
MTQJED-5605	Wipe
N8JN4L-5601	Wipe
N9DCMG-5605	Wipe
NB4FBH-5601	Wipe
NP2PYN-5605	Wipe
NT2TQB-5605	Wipe
P2E897-5601	Wipe
P73YA8-5605	Wipe
P82WTF-5605	Wipe
PB2NWU-5605	Drip Stain
	Wipe
PF8YRL-5601	Drip Stain
	Wipe
PFWHUV-5605	Wipe
PLZ2VL-5605	Wipe
PPU3UE-5605	Wipe
PTGXXU-5605	Wipe
Q9NVJJ-5605	Wipe
QA3HV7-5605	Wipe
QAM2ZD-5605	Wipe
QEFL2V-5605	Bubble ring
	Transfer Stain
	Void
QM9BMJ-5601	Wipe
QQ9LJJ-5601	Wipe
QRKJQ9-5605	Wipe
RL6F96-5605	Wipe
RNDKU7-5605	Wipe
RQ4LXA-5605	Wipe
RRY6ZB-5605	Pool
	Wipe
RTR2MJ-5605	Wipe
RU239H-5601	Wipe
RXMUFE-5605	Wipe
RZ9UD9-5605	Wipe
T3FWYR-5605	Wipe
T3PKXB-5605	Drip Stain
	Wipe
T3VUUG-5601	Wipe
T7A7A7-5605	Wipe
TG7HY6-5605	Wipe
TJ3U3K-5605	Wipe
TJXC6L-5601	Wipe
TNWLD3-5601	Wipe
U38NAG-5601	Wipe
U7NWTA-5605	Wipe
UQBPE6-5601	Wipe
UVQDX2-5601	Wipe
VA9NJQ-5605	Wipe
VBHCJA-5605	Wipe
VZZT4J-5601	Wipe
WLWPF4-5605	Wipe
X67L9L-5605	Wipe
X7DK38-5605	Drip Stain
	Wipe
XEPFMG-5605	Wipe

TABLE 2: Single Pattern Recognition
Item 3, continued

WebCode-Test	Pattern Type	WebCode-Test	Pattern Type
XRYFXZ-5605	Wipe		
Y4QPFM-5605	Wipe		
YFGZN7-5605	Wipe		
YKCPC6-5605	Wipe		
YKDKUB-5605	Wipe		
YUGWQ6-5605	Wipe		
Z8ZN8Y-5605	Wipe		
ZB6A3C-5605	Wipe		
ZD93YV-5601	Wipe		
ZE4L2W-5601	Wipe		
ZE6KU6-5605	Wipe		
ZQYUJZ-5605	Wipe		
ZRQEKK-5601	Wipe		
ZTM99A-5601	Wipe		

Pattern Types Reported for Item 3
Participants: 178

Pattern Type	Percent Reported	
Wipe	176	(98.9%)
Drip Stain	10	(5.6%)
Pool	2	(1.1%)
Transfer Stain	2	(1.1%)
Bubble ring	1	(0.6%)
Drip Pattern	1	(0.6%)
Swipe	1	(0.6%)
Void	1	(0.6%)

TABLE 2: Single Pattern Recognition
Item 4

WebCode-Test	Pattern Type
22BJVA-5605	Drip Pattern
298GHC-5601	Drip Pattern
37ZJPV-5605	Drip Pattern
39NDLJ-5605	Impact Pattern
3GZ94C-5601	Drip Pattern
3WDMLA-5605	Drip Pattern
3ZYPQG-5605	Drip Pattern
43EXDZ-5605	Drip Pattern
47HU2A-5605	Drip Pattern
4JLDEU-5605	Drip Pattern
4LCEHW-5601	Drip Pattern
63CQQX-5605	Drip Pattern
644UBT-5605	Drip Pattern
664MD8-5601	Drip Pattern
67B7WZ-5605	Drip Pattern
6AAHTZ-5601	Splash Pattern
6MXKEY-5601	Drip Pattern
6RPRT2-5605	Drip Pattern
6RU9RZ-5605	Drip Pattern
6U2N6X-5605	Drip Pattern
6YUNJT-5605	Drip Pattern
7D4YHY-5605	Drip Pattern
7PJLXR-5601	Drip Pattern
7TJ4PR-5601	Drip Pattern
7UEFT9-5605	Drip Pattern
7VAYVA-5601	Drip Pattern
83LJBQ-5605	Drip Pattern
89VTLT-5605	Drip Pattern
8K4D88-5605	Drip Pattern
94DPEN-5601	Drip Pattern
9BDCZW-5605	Drip Pattern Pool
9HCYW3-5601	Drip Pattern
9JNDLW-5605	Drip Pattern
9LBAR3-5601	Drip Pattern
9XNDDZ-5605	Drip Pattern
9YXGP3-5605	Drip Pattern
A4QQQN-5605	Drip Pattern
AF2CXN-5601	Drip Pattern
AHB7UN-5605	Drip Pattern
ALBGPN-5605	Drip Pattern
ARFDDU-5601	Drip Pattern
AXL3WM-5605	Drip Pattern
AYFDRA-5605	Drip Pattern
AYXNMP-5605	Drip Pattern
B2KKTU-5605	Drip Pattern
B3DTHP-5605	Drip Pattern Pool
B78MFQ-5605	Drip Pattern
B7QG9N-5605	Drip Pattern
BDQTCX-5605	Drip Pattern
BFJ8YA-5601	Drip Pattern
BFKGVT-5605	Drip Pattern
BNREEP-5605	Drip Stain
BP6XFM-5605	Drip Pattern
C2W2ZR-5605	Drip Pattern
C4L4BM-5605	Drip Pattern
C6W6UZ-5601	Drip Pattern
CACDKK-5601	Drip Pattern
CJZALL-5605	Drip Pattern

TABLE 2: Single Pattern Recognition
Item 4, continued

WebCode-Test	Pattern Type
CMF4ZX-5601	Drip Pattern
CPZV8U-5605	Drip Pattern
CVP7LY-5605	Drip Pattern
CWXPZL-5605	Drip Pattern
D44ZB9-5605	Drip Pattern
	Splash Pattern
DFAM4H-5601	Drip Pattern
DGQLJ2-5601	Drip Pattern
DLXRW7-5605	Drip Pattern
DPKPPJ-5601	Drip Pattern
DUTXP8-5605	Drip Pattern
DXBCHZ-5605	Drip Pattern
DY7VK2-5601	Drip Pattern
EBULCJ-5605	Drip Pattern
	Drip Stain
EC6G3H-5605	Drip Pattern
EFQZ8L-5605	Drip Pattern
EGMJAM-5605	Drip Pattern
EJ6MXK-5605	Drip Pattern
EZA8GU-5601	Drip Pattern
F7FYLK-5605	Drip Pattern
	Pool
F8P9CW-5605	Drip Pattern
FAWNKN-5605	Drip Pattern
FVC9HN-5605	Drip Pattern
G22U6G-5601	Drip Pattern
GBM73F-5605	Drip Pattern
GDWYGN-5605	Drip Pattern
GE699L-5605	Drip Pattern
H2FQTM-5601	Expiration Pattern
H3VEP3-5605	Drip Pattern
H9BQ9E-5605	Drip Pattern
HFFF2F-5605	Drip Pattern
	Drip Stain
HGPF7M-5601	Drip Pattern
HH2CCR-5601	Drip Pattern
HJF6N3-5605	Drip Pattern
HKBMP4-5605	Drip Pattern
HND44D-5601	Drip Pattern
HYL3BQ-5601	Drip Pattern
JBWVFC-5601	Drip Pattern
JEW9YV-5601	Drip Pattern
JFEXMH-5605	Drip Pattern
JQDTKD-5605	Drip Pattern
JTGLEC-5601	Drip Pattern
JUC4GD-5605	Drip Pattern
JWYNLG-5605	Drip Pattern
K7GMQR-5605	Drip Pattern
K7GUND-5605	Drip Pattern
	Drip Stain
K8C6RT-5605	Drip Pattern
KLXKVT-5605	Drip Pattern
KPWWQR-5601	Drip Pattern
KTUZGY-5605	Drip Pattern
LAZY4M-5605	Drip Pattern
LKHFYF-5605	Drip Pattern
LKJYWX-5605	Drip Pattern
LLN6WH-5605	Drip Pattern
LTQCGR-5605	Drip Pattern
M3RY4H-5605	Drip Pattern

TABLE 2: Single Pattern Recognition
Item 4, continued

WebCode-Test	Pattern Type
M6YCRB-5605	Drip Pattern
MNCWNE-5605	Drip Pattern
MTQJED-5605	Drip Pattern
N8JN4L-5601	Drip Pattern
N9DCMG-5605	Drip Stain
NB4FBH-5601	Drip Pattern
NP2PYN-5605	Drip Pattern
NT2TQB-5605	Drip Pattern
P2E897-5601	Drip Pattern
P73YA8-5605	Drip Pattern
P82WTF-5605	Drip Pattern
PB2NWU-5605	Drip Pattern
PF8YRL-5601	Drip Pattern
PFWHUV-5605	Drip Pattern
PLZ2VL-5605	Drip Pattern
PPU3UE-5605	Drip Pattern
PTGXXU-5605	Drip Pattern
Q9NVJJ-5605	Drip Pattern
QA3HV7-5605	Drip Pattern
QAM2ZD-5605	Drip Pattern
QEFL2V-5605	Impact Pattern
QM9BMJ-5601	Drip Pattern
QQ9LJJ-5601	Drip Pattern
QRKJQ9-5605	Drip Pattern
RL6F96-5605	Drip Pattern
RNDKU7-5605	Drip Pattern
RQ4LXA-5605	Drip Pattern
RRY6ZB-5605	Drip Pattern
	Pool
RTR2MJ-5605	Drip Pattern
RU239H-5601	Drip Pattern
RXMUFE-5605	Drip Pattern
RZ9UD9-5605	Drip Pattern
	Splash Pattern
T3FWYR-5605	Drip Pattern
T3PKXB-5605	Drip Pattern
T3VUUG-5601	Drip Pattern
T7A7A7-5605	Drip Pattern
TG7HY6-5605	Drip Pattern
TJ3U3K-5605	Drip Pattern
TJXC6L-5601	Drip Pattern
TNWLD3-5601	Drip Pattern
U38NAG-5601	Drip Pattern
U7NWTA-5605	Drip Pattern
UQBPE6-5601	Drip Pattern
UVQDX2-5601	Drip Pattern
VA9NJQ-5605	Drip Pattern
VBHCJA-5605	Drip Pattern
VZZT4J-5601	Drip Pattern
WLWPF4-5605	Drip Pattern
X67L9L-5605	Drip Pattern
X7DK38-5605	Drip Pattern
XEPFMG-5605	Drip Pattern
XRYFXZ-5605	Drip Pattern
Y4QPFM-5605	Drip Pattern
YFGZN7-5605	Drip Pattern
YKCPC6-5605	Drip Pattern
YKDKUB-5605	Drip Pattern
YUGWQ6-5605	Drip Pattern
Z8ZN8Y-5605	Drip Pattern

TABLE 2: Single Pattern Recognition
Item 4, continued

WebCode-Test	Pattern Type	WebCode-Test	Pattern Type
ZB6A3C-5605	Drip Pattern		
ZD93YV-5601	Drip Pattern		
ZE4L2W-5601	Drip Pattern		
ZE6KU6-5605	Drip Pattern		
ZQYUJZ-5605	Drip Pattern		
ZRQEKK-5601	Drip Pattern		
ZTM99A-5601	Drip Pattern		

Pattern Types Reported for Item 4
Participants: 178

Pattern Type	Percent Reported
Drip Pattern	172 (96.6%)
Drip Stain	5 (2.8%)
Pool	4 (2.2%)
Splash Pattern	3 (1.7%)
Impact Pattern	2 (1.1%)
Expiration Pattern	1 (0.6%)

Pattern Description, Part 2

For the following pattern, indicate the pattern type(s) that best describes the image.

TABLE 3: Pattern Recognition

Item 5

WebCode-Test	Pattern Type
22BJVA-5605	Bubble ring Expiration Pattern Void Wipe
298GHC-5601	Bubble ring Expiration Pattern Void Wipe
37ZJPV-5605	Expiration Pattern Void Wipe
39NDLJ-5605	Bubble ring Expiration Pattern Wipe
3GZ94C-5601	Bubble ring Expiration Pattern Void Wipe
3WDMLA-5605	Bubble ring Expiration Pattern Void Wipe
3ZYPQG-5605	Expiration Pattern Impact Pattern Void Wipe
43EXDZ-5605	Expiration Pattern Wipe
47HU2A-5605	Expiration Pattern Projected Pattern Void Wipe
4JLDEU-5605	Bubble ring Expiration Pattern Void Wipe
4LCEHW-5601	Bubble ring Expiration Pattern Void Wipe
63CQQX-5605	Bubble ring Expiration Pattern Void Wipe
644UBT-5605	Expiration Pattern Swipe Void Wipe
664MD8-5601	Bubble ring Expiration Pattern Void Wipe
67B7WZ-5605	Expiration Pattern Wipe
6AAHTZ-5601	Expiration Pattern Wipe
6MXKEY-5601	Bubble ring Expiration Pattern Impact Pattern Splash Pattern Swipe Void Wipe
6RPRT2-5605	Bubble ring Expiration Pattern Swipe Wipe
6RU9RZ-5605	Expiration Pattern Swipe Void Wipe
6U2N6X-5605	Bubble ring

TABLE 3: Pattern Recognition
Item 5, continued

WebCode-Test	Pattern Type
6U2N6X-5605	Expiration Pattern
	Void
	Wipe
6YUNJT-5605	Bubble ring
	Expiration Pattern
	Swipe
	Transfer Stain
	Wipe
7D4YHY-5605	Bubble ring
	Expiration Pattern
	Swipe
	Void
	Wipe
7PJLXR-5601	Bubble ring
	Expiration Pattern
	Void
	Wipe
7TJ4PR-5601	Bubble ring
	Expiration Pattern
	Void
	Wipe
7UEFT9-5605	Bubble ring
	Expiration Pattern
	Void
	Wipe
7VAYVA-5601	Bubble ring
	Expiration Pattern
	Void
	Wipe
83LJBQ-5605	Bubble ring
	Expiration Pattern
	Wipe
89VTLT-5605	Expiration Pattern
	Void
	Wipe
8K4D88-5605	Expiration Pattern
	Void
	Wipe
94DPEN-5601	Bubble ring
	Expiration Pattern
	Void
	Wipe
9BDCZW-5605	Bubble ring
	Expiration Pattern
	Void
	Wipe
9HCYW3-5601	Bubble ring
	Expiration Pattern
	Void
	Wipe
9JNDLW-5605	Bubble ring
	Expiration Pattern
	Void
	Wipe
9LBAR3-5601	Bubble ring
	Expiration Pattern
	Projected Pattern
	Void
	Wipe
9XNDDZ-5605	Expiration Pattern
	Void
	Wipe
9YXGP3-5605	Bubble ring
	Expiration Pattern
	Void
	Wipe
A4QQQN-5605	Bubble ring
	Expiration Pattern
	Impact Pattern
	Swipe
	Wipe
AF2CXN-5601	Bubble ring
	Expiration Pattern
	Void
	Wipe
AHB7UN-5605	Bubble ring

TABLE 3: Pattern Recognition
Item 5, continued

WebCode-Test	Pattern Type
AHB7UN-5605	Expiration Pattern
	Projected Pattern
	Void
	Wipe
ALBGPN-5605	Expiration Pattern
	Projected Pattern
	Swipe
	Void
	Wipe
ARFDDU-5601	Bubble ring
	Expiration Pattern
	Impact Pattern
	Projected Pattern
	Void
	Wipe
AXL3WM-5605	Expiration Pattern
	Void
	Wipe
AYFDRA-5605	Bubble ring
	Expiration Pattern
	Wipe
AYXNMP-5605	Bubble ring
	Expiration Pattern
	Wipe
B2KKTU-5605	Expiration Pattern
	Wipe
B3DTHP-5605	Bubble ring
	Expiration Pattern
	Impact Pattern
	Swipe
	Transfer Stain
B78MFQ-5605	Expiration Pattern
	Void
	Wipe
B7QG9N-5605	Expiration Pattern
	Void
	Wipe
BDQTCX-5605	Bubble ring
	Expiration Pattern
	Void
	Wipe
BFJ8YA-5601	Bubble ring
	Projected Pattern
	Transfer Stain
	Void
BFKGVT-5605	Bubble ring
	Expiration Pattern
	Swipe
	Void
	Wipe
BNREEP-5605	Expiration Pattern
	Wipe
BP6XFM-5605	Bubble ring
	Expiration Pattern
	Impact Pattern
	Swipe
	Wipe
C2W2ZR-5605	Expiration Pattern
	Wipe
C4L4BM-5605	Expiration Pattern
	Swipe
	Void
	Wipe
C6W6UZ-5601	Bubble ring
	Expiration Pattern
	Swipe
	Void
	Wipe
CACDKK-5601	Bubble ring
	Expiration Pattern
	Void
	Wipe
CJZALL-5605	Bubble ring
	Expiration Pattern
	Void
	Wipe

TABLE 3: Pattern Recognition
Item 5, continued

WebCode-Test	Pattern Type
CMF4ZX-5601	Expiration Pattern
	Void
	Wipe
CPZV8U-5605	Expiration Pattern
	Wipe
CVP7LY-5605	Expiration Pattern
	Impact Pattern
	Void
	Wipe
CWXPZL-5605	Bubble ring
	Expiration Pattern
	Wipe
D44ZB9-5605	Bubble ring
	Impact Pattern
	Projected Pattern
	Transfer Stain
	Void
	Wipe
DFAM4H-5601	Bubble ring
	Expiration Pattern
	Void
	Wipe
DGQLJ2-5601	Bubble ring
	Expiration Pattern
	Void
	Wipe
DLXRW7-5605	Expiration Pattern
	Void
	Wipe
DPKPPJ-5601	Bubble ring
	Expiration Pattern
	Void
	Wipe
DUTXP8-5605	Wipe
DXBCHZ-5605	Bubble ring
	Expiration Pattern
	Void
	Wipe
DY7VK2-5601	Bubble ring
	Expiration Pattern
	Void
	Wipe
EBULCJ-5605	Bubble ring
	Expiration Pattern
	Wipe
EC6G3H-5605	Expiration Pattern
	Void
	Wipe
EFQZ8L-5605	Bubble ring
	Expiration Pattern
	Void
	Wipe
EGMJAM-5605	Expiration Pattern
	Wipe
EJ6MXK-5605	Bubble ring
	Expiration Pattern
	Splash Pattern
	Wipe
EZA8GU-5601	Bubble ring
	Expiration Pattern
	Void
	Wipe
F7FYLK-5605	Bubble ring
	Expiration Pattern
	Impact Pattern
	Void
	Wipe
F8P9CW-5605	Bubble ring
	Expiration Pattern
	Void
	Wipe
FAWNKN-5605	Bubble ring
	Expiration Pattern
	Projected Pattern
	Swipe
	Void

TABLE 3: Pattern Recognition
Item 5, continued

WebCode-Test	Pattern Type
FAWNKN-5605	Wipe
FVC9HN-5605	Expiration Pattern
	Impact Pattern
	Projected Pattern
	Void
	Wipe
G22U6G-5601	Bubble ring
	Expiration Pattern
	Impact Pattern
	Transfer Stain
	Void
	Wipe
GBM73F-5605	Expiration Pattern
	Wipe
GDWYGN-5605	Bubble ring
	Expiration Pattern
	Void
	Wipe
GE699L-5605	Impact Pattern
	Projected Pattern
	Wipe
H2FQTM-5601	Expiration Pattern
	Impact Pattern
	Transfer Stain
	Void
	Wipe
H3VEP3-5605	Bubble ring
	Expiration Pattern
	Impact Pattern
	Projected Pattern
	Void
	Wipe
H9BQ9E-5605	Expiration Pattern
	Void
	Wipe
HFFF2F-5605	Bubble ring
	Expiration Pattern
	Wipe
HGPF7M-5601	Expiration Pattern
	Impact Pattern
	Projected Pattern
	Void
	Wipe
HH2CCR-5601	Bubble ring
	Expiration Pattern
	Wipe
HJF6N3-5605	Expiration Pattern
	Void
	Wipe
HKBMP4-5605	Bubble ring
	Expiration Pattern
	Wipe
HND44D-5601	Expiration Pattern
	Void
	Wipe
HYL3BQ-5601	Bubble ring
	Expiration Pattern
	Void
	Wipe
JBWVFC-5601	Bubble ring
	Expiration Pattern
	Void
	Wipe
JEW9YV-5601	Expiration Pattern
	Void
	Wipe
JFEXMH-5605	Bubble ring
	Expiration Pattern
	Void
	Wipe
JQDTKD-5605	Bubble ring
	Expiration Pattern
	Void
	Wipe
JTGLEC-5601	Bubble ring
	Expiration Pattern

TABLE 3: Pattern Recognition
Item 5, continued

WebCode-Test	Pattern Type
JTGLEC-5601	Void
	Wipe
JUC4GD-5605	Bubble ring
	Expiration Pattern
	Impact Pattern
	Swipe
	Wipe
JWYNLG-5605	Bubble ring
	Expiration Pattern
	Impact Pattern
	Projected Pattern
	Void
	Wipe
K7GMQR-5605	Bubble ring
	Expiration Pattern
	Wipe
K7GUND-5605	Bubble ring
	Expiration Pattern
	Wipe
K8C6RT-5605	Bubble ring
	Projected Pattern
	Transfer Stain
	Void
	Wipe
KLXKVT-5605	Bubble ring
	Expiration Pattern
	Impact Pattern
	Projected Pattern
	Swipe
	Void
	Wipe
KPWWQR-5601	Bubble ring
	Expiration Pattern
	Swipe
	Void
	Wipe
KTUZGY-5605	Expiration Pattern
	Void
	Wipe
LAZY4M-5605	Bubble ring
	Expiration Pattern
	Void
	Wipe
LKHFYF-5605	Bubble ring
	Expiration Pattern
	Projected Pattern
	Wipe
LKJYWX-5605	Expiration Pattern
	Impact Pattern
	Void
	Wipe
LLN6WH-5605	Expiration Pattern
	Void
	Wipe
LTQCGR-5605	Bubble ring
	Expiration Pattern
	Void
	Wipe
M3RY4H-5605	Bubble ring
	Expiration Pattern
	Void
	Wipe
M6YCRB-5605	Bubble ring
	Expiration Pattern
	Impact Pattern
	Void
	Wipe
MNCWNE-5605	Bubble ring
	Expiration Pattern
	Void
	Wipe
MTQJED-5605	Expiration Pattern
	Impact Pattern
	Void
	Wipe
N8JN4L-5601	Expiration Pattern

TABLE 3: Pattern Recognition
Item 5, continued

WebCode-Test	Pattern Type
N8JN4L-5601	Impact Pattern
	Wipe
N9DCMG-5605	Expiration Pattern
	Wipe
NB4FBH-5601	Projected Pattern
	Splash Pattern
	Wipe
NP2PYN-5605	Bubble ring
	Expiration Pattern
	Void
	Wipe
NT2TQB-5605	Bubble ring
	Expiration Pattern
	Swipe
	Void
	Wipe
P2E897-5601	Bubble ring
	Expiration Pattern
	Void
	Wipe
P73YA8-5605	Bubble ring
	Expiration Pattern
	Projected Pattern
	Void
	Wipe
P82WTF-5605	Expiration Pattern
	Impact Pattern
	Projected Pattern
	Void
	Wipe
PB2NWU-5605	Bubble ring
	Expiration Pattern
	Void
	Wipe
PF8YRL-5601	Bubble ring
	Expiration Pattern
	Projected Pattern
	Wipe
PFWHUV-5605	Bubble ring
	Expiration Pattern
	Wipe
PLZ2VL-5605	Bubble ring
	Expiration Pattern
	Void
	Wipe
PPU3UE-5605	Bubble ring
	Expiration Pattern
	Void
	Wipe
PTGXXU-5605	Bubble ring
	Expiration Pattern
	Void
	Wipe
Q9NVJJ-5605	Bubble ring
	Expiration Pattern
	Wipe
QA3HV7-5605	Bubble ring
	Expiration Pattern
	Impact Pattern
	Swipe
	Void
	Wipe
QAM2ZD-5605	Bubble ring
	Expiration Pattern
	Impact Pattern
	Void
	Wipe
QEFL2V-5605	Bubble ring
	Expiration Pattern
	Wipe
QM9BMJ-5601	Bubble ring
	Expiration Pattern
	Void
	Wipe
QQ9LJJ-5601	Expiration Pattern
	Impact Pattern

TABLE 3: Pattern Recognition
Item 5, continued

WebCode-Test	Pattern Type
QQ9LJJ-5601	Wipe
QRKJQ9-5605	Bubble ring
	Expiration Pattern
	Projected Pattern
	Void
	Wipe
RL6F96-5605	Projected Pattern
	Wipe
RNDKU7-5605	Bubble ring
	Expiration Pattern
	Void
	Wipe
RQ4LXA-5605	Bubble ring
	Expiration Pattern
	Void
	Wipe
RRY6ZB-5605	Bubble ring
	Drip trail
	Expiration Pattern
	Wipe
RTR2MJ-5605	Projected Pattern
	Void
	Wipe
RU239H-5601	Expiration Pattern
	Transfer Stain
	Void
RXMUFE-5605	Bubble ring
	Expiration Pattern
	Void
	Wipe
RZ9UD9-5605	Bubble ring
	Expiration Pattern
	Impact Pattern
	Void
	Wipe
T3FWYR-5605	Bubble ring
	Expiration Pattern
	Impact Pattern
	Projected Pattern
	Void
	Wipe
T3PKXB-5605	Expiration Pattern
	Wipe
T3VUUG-5601	Expiration Pattern
	Void
	Wipe
T7A7A7-5605	Bubble ring
	Expiration Pattern
	Void
	Wipe
TG7HY6-5605	Bubble ring
	Expiration Pattern
	Wipe
TJ3U3K-5605	Bubble ring
	Expiration Pattern
	Impact Pattern
	Projected Pattern
	Void
	Wipe
TJXC6L-5601	Bubble ring
	Expiration Pattern
	Void
	Wipe
TNWLD3-5601	Bubble ring
	Expiration Pattern
	Void
	Wipe
U38NAG-5601	Bubble ring
	Expiration Pattern
	Wipe
U7NWTA-5605	Expiration Pattern
	Void
	Wipe
UQBPE6-5601	Bubble ring
	Expiration Pattern
	Void

TABLE 3: Pattern Recognition
Item 5, continued

WebCode-Test	Pattern Type
UQBPE6-5601	Wipe
UVQDX2-5601	Bubble ring
	Expiration Pattern
	Void
	Wipe
VA9NJQ-5605	Bubble ring
	Expiration Pattern
	Wipe
VBHCJA-5605	Expiration Pattern
	Wipe
VZZT4J-5601	Bubble ring
	Expiration Pattern
	Void
	Wipe
WLWPF4-5605	Bubble ring
	Expiration Pattern
	Impact Pattern
	Void
	Wipe
X67L9L-5605	Bubble ring
	Expiration Pattern
	Swipe
	Transfer Stain
	Void
	Wipe
X7DK38-5605	Bubble ring
	Expiration Pattern
	Swipe
	Wipe
XEPFMG-5605	Bubble ring
	Expiration Pattern
	Void
	Wipe
XRYFXZ-5605	Bubble ring
	Expiration Pattern
	Void
	Wipe
Y4QPFM-5605	Expiration Pattern
	Impact Pattern
	Wipe
YFGZN7-5605	Bubble ring
	Expiration Pattern
	Wipe
YKCPC6-5605	Bubble ring
	Expiration Pattern
	Swipe
	Void
	Wipe
YKDKUB-5605	Bubble ring
	Expiration Pattern
	Void
	Wipe
YUGWQ6-5605	Bubble ring
	Expiration Pattern
	Void
	Wipe
Z8ZN8Y-5605	Bubble ring
	Expiration Pattern
	Wipe
ZB6A3C-5605	Bubble ring
	Expiration Pattern
	Void
	Wipe
ZD93YV-5601	Expiration Pattern
	Void
	Wipe
ZE4L2W-5601	Bubble ring
	Expiration Pattern
	Void
	Wipe
ZE6KU6-5605	Bubble ring
	Expiration Pattern
	Void
	Wipe
ZQYUJZ-5605	Expiration Pattern
	Impact Pattern

TABLE 3: Pattern Recognition
Item 5, continued

WebCode-Test	Pattern Type	WebCode-Test	Pattern Type
ZQYUJZ-5605	Void		
	Wipe		
ZRQEKK-5601	Bubble ring		
	Expiration Pattern		
	Impact Pattern		
	Swipe		
	Void		
	Wipe		
ZTM99A-5601	Expiration Pattern		
	Void		
	Wipe		

Pattern Types Reported for Item 5
Participants: 178

Pattern Type	Percent Reported
Wipe	175 (98.3%)
Expiration Pattern	170 (95.5%)
Void	129 (72.5%)
Bubble ring	123 (69.1%)
Impact Pattern	33 (18.5%)
Projected Pattern	25 (14.0%)
Swipe	23 (12.9%)
Transfer Stain	9 (5.1%)
Splash Pattern	1 (0.6%)
Drip trail	1 (0.6%)

Pattern Description, Part 2

For the following pattern, write a brief description.

TABLE 4: Pattern Description

Item 5

WebCode-Test	Detailed Pattern Description
22BJVA-5605	There is an expiration pattern with elliptical and near-circular spatter stains, bubble rings, and flows on the posterboard. The general directionality of the elliptical stains is upward. There is a void in the center of the expiration pattern and a portion of the expiration pattern, including some of the flows, has been wiped.
298GHC-5601	An expiration pattern with associated flow, bubble rings and surrounding satellite spatter stains was observed on the target surface. Areas of void are present within the expiration pattern. Additionally, there are areas of the expiration pattern that have been altered by wipes resulting in some perimeter stains.
37ZJPV-5605	There were three bloodstain patterns/areas of interest (labeled A-C) on the target. An expiration pattern (Pattern A) is present throughout the entire target. A simultaneous impact mechanism cannot be ruled out for some of the observed satellite spatter stains mainly on the top of the target. A centrally located void (Pattern B) can be observed in the middle of the target where the expiration pattern was not able to be deposited. A wipe (Pattern C) is observable on the target through the pre-existing expiration pattern.
39NDLJ-5605	A series of bubble rings is described, resulting from blood emerging from the victim's airways (expiration pattern), along with an altered stain caused by the movement of an unknown object through the wet blood (wipe pattern).
3GZ94C-5601	An expiration pattern with associated spatter stains, flow, bubble rings, and mucous stands is present in the central area of the target. Wipes are present in the central and lower left areas of the target. A void is present in the central area of the target.
3WDMLA-5605	This is an image of white posterboard in the vertical plane. The pattern was found on a hallway wall of the victim's residence. The pattern was located approximately five feet from the floor. The investigation suggests a physical altercation occurred and the victim was struck several times in the face. I examined the image and observed the following bloodstains. Several large expiration patterns are located in the middle and right side of the image. Numerous bubble rings are present because of air in the blood when it was deposited. Several satellite stains are present on the left and right sides of the image from the expiration patterns. Due to gravity, several flow patterns are located on the right and left sides of the image. There are wipes through three flow patterns on the left side and two flow patterns on the right side. Perimeter stains from the flow patterns are visible, and the wipes are in a down and left direction toward the lower left corner. There is also a void in the middle of the image.
3ZYPQG-5605	Size: Overall pattern extends across (and apparently beyond) the entire width of the target (~30cm) and beyond the entire height of the target (~25cm). Several large stains with associated flows several cm in length. Individual spatters present ranging in size from less than 1mm to approximately 2mm x 4mm Shape: large irregular shaped stains with associated flows several cm in length. Individual stains are circular in center of pattern area and elliptical around periphery Distribution: spatter radiates Location: vertical poster board appearance: Some spatters contain bubble rings and are connected by mucous strands. Larger stains contain air bubbles/bubble rings and appear thick/mixed with saliva, contain mucous strands. several areas of flow are wiped through and contain perimeter stains. Several areas of the wipes contain apparent ridge detail (likely transfer stains from fingers creating the wipes). Note: bubble ring not selected as patter classification since it is a feature of the larger pattern. Transfer stain also not selected since it appears to be a feature of the wipe. Pattern is impact, likely impact of blood and saliva mixture (comports with reported injuries). Pattern is a complex pattern, with some of the spatters possibly being the result of expiration as well as impact.
43EXDZ-5605	Expiration pattern: An expiration pattern is observed (bloodstain pattern resulting from blood forced by airflow out of the nose mouth or a wound). and also in that expiration pattern a flow pattern is observed (bloodstain resulting from the movement of a volume of blood on a sourface due to gravity or movement of the target). Wipe: An altered stain resultin from an object moving through a

TABLE 4: Pattern Description
Item 5, continued

WebCode-Test	Detailed Pattern Description
	preexisteng wet bloodstain. In this case it is observed that the pre-existing expiration pattern has been altered by a moving object or element.
47HU2A-5605	There appears to be an expiration pattern with a possible void near the upper center area of the image. The void may have been crated by a possible hand that was on the target when the expiration pattern was created. There appears to be numerous wipe stains through the expiration pattern that demonstrates motion from the upper right corner of the image downward toward the lower left corner. There also appears to be projected blood in numerous areas of the expiration pattern that demonstrates gravitational flow toward the bottom of the image.
4JLDEU-5605	Item 5 depicts bloodstain patterns with characteristics and features of a few different bloodstain patterns. The pattern type of expiration pattern(s) is in nearly the entire target. Features observed of the expiration pattern(s) include some larger (~ 6 mms in "diameter" and larger) somewhat round to near elliptical stains with volume. (Flow patterns from these larger stains are present; linear stains that follow the pull of gravity and have distinct edges.) Additional characteristics of the expiration pattern(s) are many smaller (~ 1mm to ~ 3 mms in "diameter") satellite stains most of which are round/near round and near portions of the pattern(s) that are voluminous. Few of the satellite stains (~ 7) are elliptical. The satellite stains also indicates some force or pressure, such as from the air flow or pressure from the expiration. Other features present that indicate expiration pattern(s) are stringing and bubble rings within some of the larger stains. Also noted within the middle area and main bloodstaining present are areas where blood is absent in the otherwise continuous bloodstains, indicating void(s) where object(s) may have been. In and from this middle area of staining and around the void(s) are wipe(s) through some of the flow pattern(s) as indicated by the perimeters of portions of preexisting flow pattern(s). Note: Case information states person struck several time in face. Assuming this includes the mouth. No information of a breech in the circulatory system present in the case information that would support projected pattern(s).
4LCEHW-5601	Expiration pattern visible on vertical plane with associated downward flow patterns (resulting from the movement of a volume of blood on a surface due to gravity or movement of the target). Bubble rings and possible 'stringing' visible in expiration pattern. Void area present in the centre with a wipe visible through blood towards lower left.
63CQQX-5605	A void is observed at the center of the image. An expiration pattern is observed surrounding the void. Staining with downward flow is observed on the right and left sides of the expiration pattern. Multiple bubble rings are observed within the expiration pattern. A wipe pattern is observed through the void and through the expiration pattern. The wipe pattern displays directionality from right to left and downward.
664MD8-5601	There is an expiration pattern across the majority of the target surface, with multiple bubble rings visible in most of the constituent stains. There are also circular spatter stains distributed across the middle areas of the target surface with elliptical spatter stains radiating upward and outward from the central area of the target surface. The eliptical spatter stains are distributed along the upper edge of the expiration pattern. There are multiple flows continuing downward from the larger stains of the expiration pattern. In the center area of the target surface there is a void, possibly consistent with a hand. There were also several wipes extending downward and to the left from the void area through the flows. Several off these flows and some of the wipes are cut off in this photograph.
67B7WZ-5605	A) bloodstains ovold, various width from less than 1mm to 3mm, convergent distribution => IMPACT PATTERN B) bloodstains +/- circular , various width from less than 1mm to 3mm, no distribution but located at the impact pattern convergence => EXPIRATION PATTERN there are also white dots in the bloodstains and filaments between few of them confirming the classification The impact pattern shows also white dots in many of stains, at least one filament between 3 bloodstains and few stains end with a filament which suggest that the impact pattern is in fact a part of the expiration pattern C) bloodstains centimetric, all showing a downward band less than 10mm of width => FLOW D) the flows are altered or even erased by a wide trace showing internal striation and a gradient of blood colouration => WIPE the gradient allows to orient the movement downwards and from right to left If the flow occurred before the wipe, I am not able to find interaction between them

TABLE 4: Pattern Description
Item 5, continued

WebCode-Test	Detailed Pattern Description
	and the expiration pattern. Thus, the most likely chronology is that the expiration is the first but that the flow arrives rapidly afterwards. The wipe is the third event.
6AAHTZ-5601	When reviewing the bloodstain pattern, I concluded that the subject sustained injury causing an expiration pattern due to possible arterial spurts, depositing on the nearby vertical wall. Due to gravity, one can see the flow of blood in a downward direction. After partial drying of this stain, an object, appearing to be a hand, wiped through the pattern, causing the repositioning of the blood in streaks in a right to left, downward motion.
6MXKEY-5601	The bloodstain patterns appear to be as follows: -bubble ring -expiration pattern -impact pattern -splash pattern -swipe -void -wipe Small elliptical stains with radiating distribution are present along with bubble rings and strings, indicating an expiration pattern. Both volume and flow are present. Both swipe and wipe patterns are present with voids in between the stains. Certain stains throughout the pattern cannot be included or excluded as expiration or impact patterns, they have characteristics of both.
6RPRT2-5605	This pattern has an irregular shape and inhomogeneous distribution of blood. In general, it has discontinuous margins. The top part of the pattern consists of tens to hundreds of elliptical and circular spatter stains that have regular margins and a radiating distribution. They measure approximately less than 1mm to 1.95mm. The elliptical spatter stains have upward-pointing tails that indicate upward directionality. Within these spatter stains, bubble rings and mucus strands were observed. In the central pattern, there is presence of flow originating from irregular-shaped stains, likely due to the movement of blood down the vertical surface due to gravity. Surrounding these flow patterns were elliptical and circular stains, and within these stains and the flow pattern there were bubble rings and mucus strands between stains observed. The size of these elliptical and circular stains measure between less than 1mm to about 3.1mm, suggesting a variation in individual stain size within the pattern. These characteristics are consistent with an expirated pattern. In the middle to bottom left of the pattern, striations and feathering resulting in inhomogeneous distribution of blood were observed within the amorphous-shaped pattern. This is consistent with a swipe/wipe pattern. There were at least four distinct swipe/wipe patterns observed, with voids between each pattern. The four swipe/wipe patterns were generally linearly parallel to each other. At the middle bottom of the pattern within the right most swipe/wipe patterns, perimeter staining of a bloodstain that appears to be small elliptical stains connected by a mucus strand can be observed. The central area of the elliptical stains have been removed, leaving behind the edge characteristics. This suggests that the bloodstain was deposited there for a period of time, allowing it to partially dry, before the swipe/wipe pattern had occurred.
6RU9RZ-5605	Item 5 is an expiration pattern with a void area and a wipe pattern with portions that may be a swipe or wipe pattern. The expiration pattern contains two components. One is a projected stain that has enough volume to flow downward along the surface due to gravity. The second component is a spatter pattern of many circular to elliptical stains that mostly range from less than one millimeter to three millimeters in diameter (short axis on ovals) that indicate a spatter pattern. Both components also contain bubbles which indicates an expiration pattern where blood has been forced from the mouth, nose, or respiratory system with air. The spatter pattern in the lower right quadrant area contains mostly circular stains. The spatter pattern in the rest of the area contains mostly elliptical stains. Many of the elliptical stains also contain satellite stains that radiate away from the lower right quadrant. The middle of the area contains three distinct diagonal void areas caused by an object that resemble fingers of a hand. The object also appears to move diagonally down and to the left passing through a previously deposited flow pattern, which is a wipe, as indicated by the perimeter stains that remain from the altered flow stains. The overall tapering and feathering of the wipe or swipe component also indicates the object's movement. A portion of the blood displacement does not have a clear alteration of a preexisting blood deposit; therefore, a portion of this pattern could be classified as a swipe or wipe.
6U2N6X-5605	An expiration pattern is observed spanning most of the width of the image, which produced several blood stains with bubble rings present. A void is observed in the middle of the expiration pattern in a

TABLE 4: Pattern Description
Item 5, continued

WebCode-Test	Detailed Pattern Description
	rectangular shape. Finally, a wipe is observed where the expiration pattern is altered in the downward and left direction.
6YUNJT-5605	The upper and right parts of the target contain a variety of circular and oval spatter stains of varying sizes (smaller than 3 mm). The oval-shaped stains radiate outward and show an overall upward directionality. The stains contain bubble rings, and a few are connected by mucous strands. By retracing some of these stains, at least one area of convergence is located approximately in the middle-right section of the target. On the right-middle and left-middle areas of the target, there are high concentrations of small, more or less circular spatter stains (smaller than 3 mm) present. The concentration on the left-middle does not match the described area of convergence. Large bloodstains with attached downward-oriented flows of varying lengths are present on both the left and right sides of the target. This blood contains bubble rings, signs of dilution, and indications of mucous strands. The large bloodstains and the spatter stains are the result of more than one expiration. At the center of the target, the spatter pattern includes a void, the shape of which could be explained by the presence of a hand. Five more or less parallel lines of bloodstains are present. These are a combination of swipes and wipes, all with the same leftward and downward directionality. In some areas, transfer stains are present; some of these result from friction ridges.
7D4YHY-5605	An expiration pattern consisting of bloodstains and spatter stains of varying shape and size can be observed, supported by the presence of bubble rings and strands of mucus and/or saliva. Some degree of radial distribution can be observed in the upper part of the image. There is a void in the center (consistent with, but not excluded to, the shape of a hand). Several flow patterns can be observed. Across the three flow patterns to the left, the blood has been wiped from right to left in a downward motion, supported by observed "feathering", skeletonized edge characteristics of the flow patterns and a gradual change of blood volume along the wipe. Additional parallel swipes or wipes can be observed in the center of the image. The expirated blood is assessed to be produced in close proximity to the surface.
7PJLXR-5601	An expiration pattern is observed across the substrate with enough volume to create flow. A void is visible near the center of this pattern group, consistent with a hand. After deposition of the expiration pattern and production of the flows, the hand moved through the substrate in a left and downward direction, creating a wipe pattern through the flows.
7TJ4PR-5601	We have a large volume of expiration pattern on the wall, with the characteristic presence of bubble ring within a large number of blood traces associated with flows. Mucus is also present. A void is visible, linked to the apposition of a hand on the surface before expiration pattern. This same hand then created a wipe from right to left and top to bottom, altering existing flows. Bits of papillary traces can be seen in at least 3 places on the transfer mechanism. As the important volume of expiration pattern, some flows are seen to settle on top of the hand transfer, following the same path as previously altered flows.
7UEFT9-5605	Overlapping bloodstain patterns were present in item 5. The majority of this pattern was created through an expiration mechanism, with a void area in the middle of the pattern. A wipe then altered areas of the expiration pattern and moved through the void area.
7VAYVA-5601	An expiration pattern is present with associated mucous strands, spatter stains with a radiating distribution, bubble rings, and flow. Wipes are present, altering portions of the expiration pattern and overlapping a void in the center of the target surface.
83LJBQ-5605	In this photo I identify two bloodstain patterns. The first I was able to identify air bubbles in the stain, characteristics that are compatible with the expiration pattern; resulting from blood forced by airflow out of the nose, mouth, or a wound. The second I identify an altered stain resulting from an object moving through a wet bloodstain resulting in wipe pattern.
89VTLT-5605	The photograph (item #1-1-5) depicts at least three apparent bloodstain patterns consisting of an expiration pattern, wipe and void. The expiration pattern is located centrally and covers most of the image area. Within the expiration pattern are bubble ring stains, flow stains and radiating spatter stains. The wipe is located centrally and is oriented from the upper right towards the lower left (as

TABLE 4: Pattern Description
Item 5, continued

WebCode-Test	Detailed Pattern Description
	viewed facing the image). The wipe primarily consists of flow stains that have been altered. The void is located centrally and consists of three areas that are oriented diagonally from the upper right towards the lower left (as viewed facing the image). Conclusions: Expiration pattern, Wipe and Void An expiration pattern is a bloodstain pattern resulting from blood forced by airflow out of the nose, mouth, or a wound. A wipe is an altered bloodstain resulting from an object moving through a preexisting wet bloodstain. A void is an absence of blood in an otherwise continuous bloodstain or bloodstain pattern.
8K4D88-5605	Stains consistent with an expiration pattern across midline of posterboard, to include air vacuoles and mucous/saliva strands. A possible void pattern above the center line of the posterboard, causing an absence of blood within the expiration pattern. A possible wipe pattern moving from center of posterboard towards bottom left corner, through the existing blood and the area created by the void.
94DPEN-5601	There is a expiration pattern with bubble rings, mucous strands, and flow covering most of the target. Within the expiration pattern there is wipe, resulting in perimeter stains, and a void near the center of the target where more of the expiration pattern is expected but is absent.
9BDCZW-5605	Item 5 is a photo that shows staining consistent with expiration patterns in multiple areas of the photo. There are several bubble rings within the expiration patterns and within some of the smaller spatter stains around the expiration patterns. There are wipe patterns within the middle and left expiration patterns where it appears that some of the blood that was flowing downward was smeared right to left in a downward direction. The middle portion of the photo appears to have a void. This area lacks spatter stains and other staining besides smears (possible wipes/swipes) from the stains to the right of it.
9HCYW3-5601	An expiration pattern with downward flows. Bubble rings were visible within the expiration pattern along with mucus strings. There was a void in the approximate center (a bit to the upper right), possibly from a hand/fingers. A wipe was visible through part of the expiration pattern and some of the flows leaving behind some perimeter stains. The direction of travel of the wipe was downward and to the left. The wipe occurred after the event that caused the expiration pattern. Spatter stains were visible in the upper portion of the image.
9JNDLW-5605	This apparent bloodstain pattern includes small stains with a spatter-like appearance, a heavy concentration of stains with a stringy mucous-like appearance and the presence of bubble rings, indicating an expiration pattern. Some of the bloodstains flow downwards. There appears to be a void in the approximate center of the stain. There are also wipes, causing some of the blood to be smeared across the void and leaving some perimeter stains in the flow pattern.
9LBAR3-5601	Most likely simulated projected pattern, the full pattern was not present for a complete determination. Many large volume flows were present down the target. Small spatter stains were present, as well as bubble rings, and mucus/stringy mucus in the blood, which was indicative of an expiration pattern. A wipe through the pattern with a direction of travel that was down and to the left (as oriented to the scale in the photograph). The wipe was through the approximate center of the pattern, with perimeter stains on some of the flows. There also appeared to be small void areas at the top of the pattern, above the origination area of the wipe.
9XNDDZ-5605	Void in centre of image when expiration pattern deposited. Subsequent wipe through blood already present from the expiration pattern. Expiration pattern with a combination of smaller stains, some with bubble rings, and larger stains with flow pattern rivulets. Some of the flow pattern rivulets show signs of alteration with perimeter staining remaining where the wipe has travelled through.
9YXGP3-5605	This pattern exhibits one or more Expiration Patterns which contain Bubble Rings and appear to be diluted in some areas. There is also a stringy appearance in some areas, which may be indicative of saliva mixed with the blood. There appears to be a Void in the middle of the overall pattern, which would be more commonly associated with two separate Projected Patterns, however, due to the appearance of Bubble Rings, the diluted appearance of some areas, and the areas with a stringy appearance, this is likely representative of an Expiration Pattern. Although, Expiration Patterns typically have much smaller microdroplets in larger quantities than exhibited in this overall pattern.

TABLE 4: Pattern Description
Item 5, continued

WebCode-Test	Detailed Pattern Description
	There are also several Flow Patterns and several Wipes traveling through the Flow Patterns. One of the Wipes has a Flow Pattern on top of the Wipe. There are also some Satellite Stains exhibited around the parent stain(s).
A4QQQN-5605	In this scenario we can observe different patterns of blood stains such Bubble ring, Expiration pattern, Impact pattern, Swipe pattern, Wipe pattern and Flow pattern too.
AF2CXN-5601	An expiration pattern with flow. Bubble rings and saliva strands visible. In the middle of the expiration pattern is a void (from a hand). A wipe trough the expiration pattern (fingers) from top right towards bottom left.
AHB7UN-5605	This is a complex pattern and without further context (i.e. a broader view of surrounding surfaces) it is difficult to be definitive. However, the large volume stains have the appearance typical of projected stains (from ruptured artery) although there are numerous bubble rings that suggest the blood is mixed with air. Furthermore there are some stringing features to the blood staining and associated spots of blood that indicate the presence of expirated blood. The blood spots do have directionality and there is therefore the possibility that some of them form an impact spatter pattern (again without a broader view it could be that this blood is from an exhalation alone). The blood has been wiped, whilst still wet, across the board from right to left and down (when viewed in front) and was still sufficiently wet to allow a further run to form on the left side over the wipe. There also appears to be a void between the two main areas of blood staining.
ALBGPN-5605	Large volume drips with associated flows down the target board (vertical). Some of the flows, primarily to the left side have been disrupted once the blood had started to partially dry, by an object wiping through the blood (wipe pattern) resulting in alteration of the staining. There is also evidence of swipes in the blood staining to the target board around the centre of the pattern but could be continuation of the wipe pattern observed higher up the board. Striations and feathering can be observed in both pattern types (swipes/wipes) which indicates movement. Airborne blood staining observed with the majority of the blood that is towards the centre and right has hit perpendicularly to the target board. Some of these spots and some of the directional stains to the upper section of the target board appear to radiate and are at differing angles to each other, it also pertinent to note that there is the presence of air bubbles within the blood staining, some stringiness and joining of stains indicating that the blood is possibly mixed with another substance such as saliva / surfactant to give this appearance. Given the radiation of this airborne staining, there are areas of the target which are devoid of blood where I would expect to see a continuation of airborne blood and therefore, it is apparent that there is a void (possibly something similar in the shape of a hand – possibly the left?). Overall, the distribution of blood indicates that an individual has been bleeding whilst upright (given that the staining was ~5 feet from the floor and that the majority of the blood has hit the target perpendicularly). Likely that the individual bleeding has projected large volumes of blood onto the wall which has started to dry prior to the individual expirating blood to the same surface whilst having their or another individuals possible left hand on the wall whilst they are expirating/coughing out blood, creating a void. The hand has then subsequently moved along and down the blood stained surface altering the blood staining creating a wipe pattern.
ARFDDU-5601	Large volume bloodstains, created when blood is ejected under pressure, can be seen in the image. In my opinion, these are projected bloodstains, with associated flows of blood. Air bubbles can be seen within the bloodstaining, and some stringing can be seen between bloodstains, indicating that the bloodstaining could have been ejected from an airway. In my opinion, some of the flows of blood have been wiped through, altering the original flow bloodstain and creating perimeter stains. It is possible that it was fingers that have wiped through the bloodstaining, as possible bloodstained skin ridge detail can be seen. There are spatter stains radiating away from the projected bloodstaining, which range from less than 1mm to approx. 2x3mm. In my opinion, these spatter stains could be either expirated or impact spatter stains, resulting from blood forced by airflow out of the nose, mouth or airways, or, resulting from an object striking another surface wet with blood. There is a void area in the centre of the image, where there are no spatter or projected bloodstains, meaning that an object was obstructing the surface when the spatter and projected bloodstains were deposited. When

TABLE 4: Pattern Description
Item 5, continued

WebCode-Test	Detailed Pattern Description
	the projected bloodstains were wiped through, this has then created the smeared bloodstaining within the void area.
AXL3WM-5605	Item 5 is a complex bloodstain pattern on a vertical posterboard spanning the area of the board and measures 233mm x 300mm. The bloodstain pattern consists of 300+ near circular, elliptical, and irregular spatter stains ranging from submm to 3.3mm x 3.4mm in size. Spatter stains are mostly towards the top and the right of the pattern and radiate outwards. Additional irregular staining with at least 8 associated downward flows are also present. Flows range from 20mm to 144mm. Both the spatter stains and irregular stains contain mucus strands and bubble rings. This is an expiration pattern. The expiration pattern and flows have been altered by wipe. There is perimeter staining in three of the flow stains along with areas of uneven distribution, feathering, and striations. The wipe stains are generally from the center of the expiration pattern to the bottom left of the board. Possible friction ridge detail near the beginning of wipe striations. A void is near the center of the pattern where the expiration pattern is not present, and the wipe stains are. This complex bloodstain pattern contains an expiration bloodstain pattern, wipe, and void.
AYFDRA-5605	A complex area of staining was reportedly located on the wall approximately five feet from the floor. An expiration pattern was identified based on the radiating distribution of the spatter stains, the presence of mucus strands and bubble rings, and the variation in stain size and shape (i.e., circular, elliptical, and irregular). A wipe pattern was located in the approximate middle of the stained area and identified based on the observed feathering, striations, variable stain concentration, and the presence of multiple altered stains.
AYXNMP-5605	An analytical quality photograph in a vertical plane on white cardboard showing a bloodstain in a circular, elliptical, elongated and irregular shape, radial distribution, red, light red and dark red in color. This bloodstain shows a bubble ring. Pattern type: Expiration Pattern. However, a blood stain with an irregular shape, linear distribution, red, light red and white color is also shown. Pattern type: Wipe.
B2KKTU-5605	Area of expirated blood deposited onto surface. Visible characteristics, small bubbles within blood 'stringing' between smaller blood stains some areas of staining poss diluted Some blood stains heavy enough in areas to cause runs, some of which have been disturbed after being deposited (wipe)
B3DTHP-5605	I would describe item two as a contact stain, more specifically, a saturation stain. The stain is approximately 81 mm left to right and approximately 60 mm top to bottom. I would describe item three as a transfer stain, more specifically, a swipe stain. The swipe would be going left to right in an upward direction. There is evidence that the original drip stain began to dry, and there is the presence of the edges drying prior to the swipe occurring. I would describe item four as a gravity stain, more specifically, a drip pattern that contained some pooling. There appears to be a pool of blood in the center of the item, which I would classify as the parent stain. There are numerous satellite stains with minimal spines, indicative of blood dripping into another liquid. There are multiple patterns observed in item five, including a swipe, impact pattern, and expiration. The expiration stain appears to have dried prior to the swipe occurring. The expiration has a downward flow that the swipe appears to go through. There is an appearance of bubble rings and mucus strands in the stain. In part of the swipe, there is a transfer of some ridge detail. Towards the top of the stain, I observed some impact stains, appearing to radiate in an upward direction.
B78MFQ-5605	An expiration bloodstain was observed across the wall in the image. The expiration pattern is a bloodstain pattern resulting from blood forced by airflow out of the nose, mouth, or a wound. An area void of bloodstains was observed at the center of the expiration bloodstain pattern. It appears that an object, possibly a hand, was on the surface when the expiration bloodstain pattern was deposited. The presence of the hand caused a void, or an absence of blood in the otherwise continuous expiration bloodstain pattern. A wipe pattern was observed across the surface of the wall from the upper right-hand corner to the lower left-hand corner of the wall. It appears that an object, possibly a hand, moved through the expiration bloodstain pattern after the expiration bloodstain pattern was deposited. The movement of the hand altered the preexisting wet expiration bloodstain pattern resulting in a wipe pattern.

TABLE 4: Pattern Description
Item 5, continued

WebCode-Test	Detailed Pattern Description
B7QG9N-5605	In my opinion, this blood staining appears to be expirated, deposited on to a vertical surface and whilst still wet has run downwards. Some of this stain has been wiped, from right to left by an object when the blood was wet. Numerous tiny spots present, some with direction and of various sizes. Many spots appear to have bubbles in them. There is a void in the central area, with smeared blood stains running through, but there does not appear to be any small spots present in this area.
BDQTCX-5605	The bloodstain pattern consists primarily of an expiration pattern with associated void and wipe. Within the expiration pattern, bubble rings are present as well as associated flows. Spatter stains are present throughout the bloodstain pattern. Near circular spatter stains are present within the central portion of the bloodstain pattern indicating an angle of impact at or close to 90 degrees. Spatter stains towards the top half of the bloodstain pattern have an elliptical shape (impact <90 degrees) with directionality away from the central portion of the bloodstain pattern (towards top left and top right corners of the target). There is a notable absence of bloodstaining within the central portion of the target (void). Alteration of the expiration pattern is visible with a wipe present, showing directionality from the top right corner of the target towards the bottom left corner of the target. Edge characteristics of some flows are present.
BFJ8YA-5601	Item #5 Documentation: Location: Vertical Plane Size: ~296 mm x 232 mm Distribution: Random Shape: Random Appearance: A collection of linear stains (up and down) that start about halfway down the surface and extend the length of the board. Perimeter staining present in the three linear stains on the left side of the surface. Bubble rings present in the linear stains. Larger volume of blood with some areas of diluted appearance on the top of the linear stains and welling on the bottom of the linear stains. There are three diagonal stains with feathered edges seen in the center space and extending through the linear stains. In the space above the linear stains, there are small droplets that are elliptical in shape, show directionality, and have intact margins.
BFKGVT-5605	The bloodstain pattern depicted in 25-5605_Item5 is a complex pattern deposited on a white poster board positioned on a vertical plane. The pattern can be segregated into (4) elements, which include an expiration pattern, a swipe and wipe pattern, and a void. The expiration pattern consists of left and right features which are segregated by an altered artifact within the pattern area. These elements of the pattern area contain downward linear flow characteristics ranging in width from approximately 4.5 mm to 7.8 mm. These linear lines originate from several irregular shaped bloodstains, which consist of irregular and indiscriminate shapes. The distribution of the expiration pattern is random with interconnecting ligaments or mucous strands. The linear characteristics extending towards the bottom of the image are indicative of a notable level of blood volume present at the time of pattern creation. There is a variation in color from dark red to light red with visible air pockets observed throughout the body of the bloodstain pattern. These air pockets within the pattern are indicative of air bubbles being present at the time of pattern creation. The overall pattern area depicted in 25-5605_Item5 is approximately 261 mm wide, with blood volume extending past the lower edge of the image. Based on the orientation of the target surface the linear characteristics are likely created as a result of gravity pulling the blood volume from the upper limits of the pattern area towards the ground. The altered feature (Swipe / Wipe) of the pattern area is approximately 121.9 mm (wide) by 241.4 mm (long), and extends between the central elements of the pattern area to the lower left corner of the image. It should be noted part of this feature extends past the lower limits of the image. The shape is irregular with limited definition, and the color varies from dark red to light red. This color variance is indicative of a transition in volume along the target surface, and feathering / striations are observed throughout this element of the pattern. These alteration artifacts are indicative of lateral movement along the target surface. Thin demarcations or perimeter stains are observed within the linear aspects of the pattern area, which indicate the direction of movement along the target surface went from the central element of the pattern towards the lower left corner of the image. The upper element of the bloodstain pattern is uniquely different from the large volume stains observed in the image. This element of the pattern area consists of circular and elliptical spatter stains deposited with a radiating distribution from the right feature of the large volume expiration patterns. The elliptical stains range in size from approximately 2 mm to less than 1 mm wide, and the circular

TABLE 4: Pattern Description
Item 5, continued

WebCode-Test	Detailed Pattern Description
	stains range from approximately 3.4 mm to less than 1 mm. These stains maintain a dark red color with visible air pockets observed in several locations throughout this pattern element. These air pockets are indicative of air bubbles being present at the time of pattern creation. The fourth element of this complex pattern is an underlying void area. This element of the pattern area consists of an area containing an absence of blood within an otherwise uniformly stained target surface. The overall size of this pattern area measures approximately 136 mm by 204 mm. It can be noted that altered elements of this pattern element can be observed within this area, which was deposited after the absence of bloodstain was created.
BNREEP-5605	The main pattern appears to be an expiration pattern with air bubbles trapped in the blood and the larger blood drops running down due to gravity. Then something, likely a hand with all five fingers, wiped down the stain from the top right toward the bottom left of the stain.
BP6XFM-5605	In this case we can observe different patterns of blood stain bubble ring, swipe pattern, impact pattern, wipe pattern, expiration pattern and flow pattern too.
C2W2ZR-5605	The pattern covers approximately 250mm in length (across), by 225mm wide (down), on a vertical plane. There are large irregular shaped stains in the middle of the pattern with enough volume to cause flow. They contain multiple air bubbles throughout the pattern, along with some mucous strands, which is consistent with an expiration pattern. 100+ small round and elliptical spatter stains, some with direction, are present along the top of the pattern and on the right side. The pattern has been altered with what appears to be a wipe through the middle of the pattern. The flow line perimeters are visible, indicating the expiration pattern and flow occurred first, and was there for some time, prior to the wipe through the pattern.
C4L4BM-5605	Irregular shaped stains with flow, mucous strands, and bubble rings were present on the left and right side of the surface (A1 and A2). These were consistent with an expiration pattern. Circular and elliptical spatter stains were present around these larger stains and were consistent with satellite stains. Portions of A1 and A2 appeared altered with perimeter staining present in A1. Altered areas were consistent with a swipe/wipe. The lack of staining present in the middle of the surface (B1, B2, and B3) was consistent with a void.
C6W6UZ-5601	Flows are observed on the left and right sides of the image, and within the flows are bubble rings. Portions of the larger stains/flows are lighter with a slightly diluted appearance. Several of the flows are altered by a wipe (three of the flows on the left partially consist of perimeter staining, so it appears those flows were present first and then wiped through). There are two wipes and three wipe/swipes (did not observe characteristics to distinguish between wipe or swipe) parallel to each other, and the three wipe/swipes have feathering on the bottom middle. The direction of motion of the wipe and wipe/swipes is from the upper right to the lower left. Mucous strands are observed throughout. There are approximately hundreds of round to elliptical stains with diameters of approximately less than 1mm to 4mm. Several of these round/elliptical stains have bubble rings within them and they vary from dark to slightly lighter. Some of these round/elliptical stains seem to be in an almost radiating distribution, but other stains do not, as they appear to not converge with the rest. Gaps in staining are observed within the upper area of the round/elliptical stains and the middle and bottom area of the large stains/flows, which is consistent with a void. The large stains/flows and round/elliptical stains are consistent with an expiration pattern.
CACDKK-5601	An expiration pattern with associated spatter, flow and bubble rings was observed on the target. A void was observed near the center of the expiration pattern where no spatter stains were present. Multiple wipes with associated perimeter stains were observed diagonally across the expiration pattern.
CJZALL-5605	Item 5 is a complex bloodstain pattern on the hallway wall of a residence. This pattern was centered approx. 5ft off the floor. The decedent was located on the floor adjacent to this complex pattern with apparent injuries to their face. The patterns in item 5 are overlapping and include an expirated pattern and wipes (described in further detail below). Expirated: An irregular, random distribution of larger volume stains have flows downward. These stains are amorphous. Spatter stains generally

TABLE 4: Pattern Description
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WebCode-Test	Detailed Pattern Description
	surround the larger volume stains and somewhat radiate. The larger volume stains are possibly slightly diluted. The larger volume bloodstains, flows and spatter stains all have bubble rings throughout. Possible mucus strands are interconnecting many of the bloodstains. A hand/fingers shaped voidis within the expirated pattern with the fingers pointing upward and to the right. There is an absence of spatter and flow bloodstaining within this hand shape. Wipe: Five linear areas of wipes are downward and to the left through the expiration pattern. Apparent friction ridge detail is present at the tip of at least 3 of the finger areas of the void. Some of the flows have dog legs in line with the wipes, and some of the flows had partially dried prior to the wipes and have perimeter staining down the length of the original flow.
CMF4ZX-5601	Red/brown stains- some with bubbles and "mucous" like strands - indicative of expiration pattern. Areas that appear to be wiped through after deposition of blood - wipe Other areas with no staining - appear to have been covered when blood was deposited - void Additional smaller stains on top third of target - could be part of expiration pattern or could be a separate impact pattern. Cannot be definitive because of void area and inability to see additional area beyond photograph. Blood at both left and right sides of target appears to "run" in downward direction - flow.
CPZV8U-5605	The central stain was observed to be large and amorphous in shape, with discontinuous margin, measuring about 300mm by 175mm. Quite a number of air vacuoles (bubble rings) was observed across the entire central stain. Beaded bloodstains linked together by mucous or salivary strand were observed. Flows were also observed down the central stain, due to gravitational pull down the vertical surface. Numerous satellite spatter stains measuring from sub-millimeter to 1 millimeter was observed radiating upwards from the central stain observed. These characteristics are consistent with a expiration pattern. Perimeter stains were observed along the flows of the central stain. Striations were observed emanating from the original flow pattern. Feathering were also observed at the left edge of the altered stain. These characteristics are consistent with a wipe pattern from the right to the left.
CVP7LY-5605	Impact pattern was observed in the upper part of the image. A void was observed in the middle of the image below the impact pattern. Expiration patterns were observed on both the left and right side of the void. The expiration patterns were altered, creating a wipe pattern in the middle of image. The direction of the wipe was probably from top right to bottom left of the image.
CWXPZL-5605	Item #2: The pattern show the accumulation of blood in absorbent material. Item #3: The pattern stain has been altered by another object wipe the original form. Item #4: The pattern is from accumulation of blood over the same place. Item #5: This item show three different patterns. The first is presence of bubble rings , result from air of the blood. The second expiration pattern, from the ejection of blood under pressure. The third pattern is a wipe, result of object in movement, alteration of the original expiration and bubble rings pattern.
D44ZB9-5605	The pattern has been altered. In an earlier stage, multiple spatter stains with radial convergence and large amounts spreading along multiple directions and flowing downwards were on the wall. The spatter stains are elliptical but not extremely elongated, indicating that the impact was at least 10 cm from the wall. The absence of a clear convergence area suggest that there may have been more than one impact. Inside the large surfaces covered with blood are multiple bubble rings, sign that the blood contained air. These two patterns are an impact pattern and a projected pattern, probably from a wound to the respiratory tract (mouth, throat) because the blood was mixed with air. Multiple spatter. A void is visible at the center of the vertical wall and may have been larger before some of the blood was wiped off, by an object moving across the wet blood, with a motion going downwards and to the left. The wipe is the alteration of the pattern.
DFAM4H-5601	An expiration pattern was observed (with bubble rings included) spanning across the entire target. A void was observed amongst the the expiration pattern near the center of this target. A wipe was observed ranging from above the center right region of this target to the bottom left corner of this target.
DGQLJ2-5601	There are several somewhat irregularly-shaped, large stains with apparent flow patterns associated with them located on the target. The flow patterns and the stains they originate from contain bubble

TABLE 4: Pattern Description
Item 5, continued

WebCode-Test	Detailed Pattern Description
	rings and mucus strands which indicate an expiration pattern. Some of the flow patterns have perimeter staining in them, indicating that an object moved through them after they had partially dried. There are five (5) apparent wipes through the center of the target that disturb some of the flows. The wipes have striated appearances and taper off near the lower left corner of the target. Spatter staining showing slight directionality is located over most of the top two-thirds of the target except for the area near the center. This indicates a void in that area.
DLXRW7-5605	This is a complex pattern covering the majority of the image. This pattern consists of an expirated pattern generally in the upper middle of the image which has been disturbed by a series of parrel wipes across from upper right to lower left. There is a void located in the central area of the image. The expirated pattern had sufficient volume to create flow down the pattern.
DPKPPJ-5601	An expiration pattern is present across the target with a void near-center as well as wipes near-center and in the lower left.
DUTXP8-5605	A wipe is observed in the preexisting expiration pattern of suspected blood on the wall.
DXBCHZ-5605	expiration pattern with a void in the center and some flow associated with it. An object(s) passed through some of the the wet staining moving diagonally from the upper right side to the lower left side of the target creating a wipe pattern and altering the flow patterns turning some of them into perimeter stains. Bubble rings and mucous strands present throughout patterns.
DY7VK2-5601	There is an expiration pattern on the target with associated flow, bubble rings, and spatter stains surrounding it. Some of the flow appears altered by wipes resulting in perimeter stains. There is a void in the center area of the target within the expiration pattern.
EBULCJ-5605	1. Passive Patterns: these are caused by the force of gravity, without the intervention of external forces that alter their trajectory. 2. Drip Pattern: this is the result of a liquid dripping onto another liquid on a surface, at least one of which is a bloodstain. 3. Drip Stain: A bloodstain that results from a drop that fell due to gravity. 4. Transfer Pattern: establishes that the source was bloody before coming into contact with the surface. 5. Projected Pattern: A bloodstain pattern resulting from the ejection of blood under hydraulic pressure, usually caused by a breach in the circulatory system. 6. Expiration Pattern: it is a bloodstain pattern that results from the forced expulsion of airflow through the nose, mouth, or a wound and indicates the possibility that the lung or airways suffered damage. Bubbles rings can be observed in the blood pattern or loops between the drops. This is classified under the types of projected patterns. 7. Wipe Pattern: it is a characteristic transfer pattern when a stain is altered as a result of an object moving through an existing wet blood stain. 8. Saturation Pattern: it is the blood stain pattern resulting from the accumulation of liquid blood in an absorbent material.
EC6G3H-5605	At least six large volume bloodstains with a curvilinear appearance and flow bloodstains extending downward are in the image. Many of the flow bloodstains overlap/flow into each other and some extend off the bottom of the image. At least 150 spatter bloodstains are in the image, primarily concentrated along the top of the image, though some of the bloodstains are intermixed within the large volume bloodstains. Thin, possible mucous strands, as well as bubble rings, are throughout the pattern. These all make up an expiration pattern. Near the center of the image is an area that is lacking bloodstains where bloodstains would otherwise be expected (void). Primarily in the center of the image are linear, irregular-shaped bloodstains. These bloodstains are through the void and alter the expiration bloodstains, creating perimeter stains in some areas. The bloodstains have faint striations and have an overall more concentrated appearance at the right side of the bloodstains, with a diminishing volume at the left end, indicating directionality from right to left and downward. These are wipe bloodstains.
EFQZ8L-5605	In the upper part and the right part of the image, there are numerous spatter stains deposited in a pattern that has a radiating distribution. Some of the spatters contain vacuoles (small air bubbles) and others contain evidence of mucus strands. Certain of the spatter stains are paler than the others. These observations are consistent with an expiration pattern. A voided area is present, in the center of the radiating spatter pattern. In the center part of the image, there are irregular bloodstains with

TABLE 4: Pattern Description
Item 5, continued

WebCode-Test	Detailed Pattern Description
	blood flows, originating from a certain volume of blood deposited on the vertical surface. Wipe patterns are visible throughout some of the irregular bloodstains and flow patterns.
EGMJAM-5605	On the wall, an expiration pattern (a bloodstain pattern resulting from blood forced by airflow out of the nose, mouth, or a wound) is observed. This is evident by the multiple bubble rings or outlines within a bloodstain resulting from air in the blood. Mucosa strands mixed with blood are also evident in the pattern. There is movement through the bloodstain. Given that the bloodstain occurred and then the movement, this is a wipe or an altered stain resulting from an object moving through a preexisting wet bloodstain. The area of disturbance shows evidence of having time to begin drying, hence the outline of the pattern or a perimeter stain, which points towards the expiration stain occurring first, then the movement through the pre-existing blood, resulting in the wipe. The feathering of the wipe indicates that the moment was most likely from the top right of the image towards the bottom left. There is also a flow pattern, or a bloodstain, resulting from the movement of a volume of blood on a surface due to gravity or movement of the target.
EJ6MXK-5605	- An analysis quality photo in which it is observed a white vinyl tile surface with multiple blood patterns. * I observed a bloodstain which it have an circular, elliptic, elongated and irregular form. It is color red, dark red and light red. It have a lineal and radial distribution and this one should be classified as Expiration pattern, because it is a bloodstain patter resulting from a blood forced by airflow out of the nose, mouth, or a wound. * I observed a bloodstain which it have an irregular and elongated form. It is color light red. It have a lineal distribution and this one should be classified as Wipe, because it is an altered stain resulting from an object moving through a preexisting wet bloodstain.
EZA8GU-5601	There is an expiration pattern on the vertical posterboard, containing large irregular shaped stains with bubble rings and beaded strings, and numerous adjacent small spatter bloodstains. Some of the spatter stains also contained bubble rings and beaded strings. Some of the parent stains had associated flow stains running vertically down the posterboard surface. There was a void region in the approximate centre of the expiration pattern, indicating an object was present on the posterboard during the deposition of the expirated blood. There were five, thin, long wipe stains with directionality from top right to bottom left of the posterboard. The wipes passed through the void area and through some of the pre-existing flow stains leaving perimeter stains.
F7FYLK-5605	The upper part of the picture shows multiple spatter stains in a radiating distribution (left ruler between 0- and 85-mm). Circular and elliptical stains are present (size range from less than 1 mm to 7 mm) with an upward directionality. This pattern is consistent with either an impact pattern or an expiration pattern. A lack of spatter stains in the middle of this pattern could be associated with void area. Several irregular shape stains with flow pattern are visible (left ruler from 35 mm to the bottom of the picture). Long fine line consistent with mucus strands and air vacuoles are also visible. These blood stains show characteristic of an expiration pattern. The stains in the right part of the picture are surrounded by small spatter stains, mostly circular and stains size of less than 1mm are present. Through the expiration pattern, some sections have been altered by the motion of an object while the blood was still liquid creating a wipe pattern.
F8P9CW-5605	Red-brown stains consistent with an expiration pattern were present on the wall. Circular and elliptical stains, some with directionality as well as air bubbles, mucous strands, areas of flow and perimeter stains were noted in the pattern. A voided area as well as wipes were noted through the pattern.
FAWNKN-5605	Depicted in Lab Item #5 is numerous bloodstain patterns on a white poster board in a vertical orientation. The overall pattern area is approximately 24.5 centimeters by 28.5 centimeters. Both circular and elliptical bloodstains are present in the pattern area and range in size from one (1) millimeter to three (3) millimeters. The elliptical bloodstains indicate an upward and outward direction. Thin wispy lines of blood are present in the pattern area and are indicative of mucous strands. Larger stains exhibit directionality from left to right and have appendages which stream downward. Circular vacuoles can be observed in several of the streams of blood. In the center of the overall pattern area is an absence or alteration of bloodstains. Elongated bloodstains with striations and diminishing volumes indicate directionality from the upper center of the pattern area and

TABLE 4: Pattern Description
Item 5, continued

WebCode-Test	Detailed Pattern Description
	downward to the lower left and center of the pattern area.
FVC9HN-5605	In item 5, an expiration pattern was observed on a vertical plane with a disruption in the center of the expiration pattern and the downward flow of the blood. On the left side of the vertical plane, perimeter stains were present. The expiration pattern deposited on the vertical plane prior to the wipe occurring. An impact pattern was present above the projected pattern due to directionally being present. A void pattern was present at the center of the vertical plane prior to the bloodletting event; however, the wipe pattern occurred once the obstruction was no longer present.
G22U6G-5601	An expiration pattern with downward flow (gravity) encompasses the majority of the posterboard. Larger, irregularly shaped stains contain numerous bubble rings, and mucous strands indicative of this pattern. There are also smaller spatter stains (approximately 1-3 mm), some of which contain bubble rings and associated mucous strands and directionality. A clear void is observed the central lower and central middle portion of the expiration pattern (i.e. clean no stains). A Wipe pattern is observed to be moving through (direction is right to left and downward) the expiration pattern. This pattern is demonstrated by the feathering, linear striations, and skeletonized edges of stains associated with the expiration pattern. Location is from the upper middle to lower left of the posterboard (approximately 26x13 cm) A possible friction ridge stain transfer pattern (approximately 8x6 mm) is observed in the right middle portion of the posterboard (far right edge of wipe) It is possible that some of the smaller spatter stains, specifically those showing directionality, that I have associated with the expiration pattern could indicate or be part of an additional pattern, namely an impact pattern. I do not see many obvious overlays, so that is one reason for not associating them to a separate pattern. Directionality shown is upward and away from the middle right location.
GBM73F-5605	Series of irregular-shaped volume stains with associated flows (some of which are combining). The flow is in downwards direction (on the vertical). Staining has signs of being physically altered/diluted due to variation/lightening in colour. There is a presence of air bubbles and stringing/beading in multiple areas (especially on right side of pattern). Possibility of blood:saliva mix with positive indicators of expiration pattern. Note: the force applied cannot be fully determined but likely airflow = Expiration. However, in a simulated scenario the use of a different force such as hydraulic cannot be ruled out. Large number of individual airborne stains present. These stains vary in size with the stains on the top section outer edge of the pattern exhibiting directionality (away from volume stains) and stains to the right of pattern circular and indicating a 90 degree impact angle with the target. These stains are spatter stains and likely part of the main pattern (ie expiration) with the possibility of some stains being satellite/secondary spatter generated from the impact of the volume stains with the target surface. Cannot rule out an independent event to generate some of the observed spatter staining. A subsequent event then occurred after the main (expiration) pattern was deposited and allowed to partially dry. A surface/object contacted the target and moved through the pre-existing pattern in possibly a downwards-left direction and partially removed/partially redistributed the bloodstaining in the contact area = wipe. Evidence of the pre-existing partially dried flows are evident on the left side as there skeletonization/perimeter staining present on the outer edges of three of the flows and show the sequence of events.
GDWYGN-5605	The target is a posterboard on a vertical plane. On the upper left and lower right portion of the target are bloodstain pattern that are irregular shaped and measure approximately 5cm x 5xm and 5cm x 11cm. These stains stains then have linear stains going down the target. These are expiration pattern with associated flow patterns. In the center of the target is an area that has surrounding spatter stains, with no such staining in several areas. This area is a void. There are several light in color bloodstains that have striations. These stains seem to generally have a heavier concentration of blood at the upper right and less at the lower left. These stains measure approximately 1.5cm x 13cm in some areas. The stains are somewhat linear. These stain are wipe patterns.
GE699L-5605	This bloodstain appears to be made up of at least two patterns. The first being a "Projected Pattern" resulting from the ejection of blood under pressure, and onto the wall. These are the large volume stains that hit and run down the wall. The Projected pattern has the appearance of having small air bubbles mixed in the blood. After the "Projected pattern" is made, a "Wipe" pattern is created by an

TABLE 4: Pattern Description
Item 5, continued

WebCode-Test	Detailed Pattern Description
	object contacting the bloodied area and moving through the preexisting wet bloodstain. The motion of the "Wipe" is down and to the left and appears to possibly have been created by a Left hand, altering the flow of the Projected pattern. Above the Projected Pattern and Wipe Pattern, there are some small radiating spatters travelling in upwards. This could be an "Impact Pattern" resulting from an object (hand?) striking liquid blood (projected).
H2FQTM-5601	Item 5 is a complex stain consisting of expiration patterns with downward flows, impact pattern stains, wipes, transfer stains, and voids. The expiration patterns are the major stains and occupy the central majority of the photograph. Air bubbles, mucus strands, and dilution are apparent in the expiration patterns and the volume has resulted in downward flows throughout. Radiating outward from the expiration patterns, and in the upper area of the photograph, are impact pattern stains. There are five individual wipes through the middle of the photograph with movement downward and to the left. Voids are present throughout the central area of the stain group. There is a transfer stain at the start of the second wipe from the top on the left side of the image and a transfer stain at the start of the bottom wipe on the right side of the image.
H3VEP3-5605	The target surface contains at least 4 separate overlapping patterns: 1) Impact: the upper half of the target contains small circular to elliptical stains distributed in a radiating manner 2) Projected expirated pattern: A large volume of blood struck the target in multiple areas which then flowed downward due to gravity. Within the pattern and flows, bubble rings and saliva strands were noted. 3) Voids: In the middle of the target there are four narrow elongated diagonal voids (which are oriented close together and consistent with the size and shape of fingers) that interrupt the otherwise continuous stains and patterns listed above. 4) Wipe: After the flows from the projected expirated pattern were deposited on the target, an object moved through the pattern traveling from right to left diagonally downward as indicated by a. the skeletonize outline of the original flow patterns and b. the blood from within the flows being pushed away to the left. Conclusion: Based on the above observations, it would be consistent that a hand was situated on the wall when the impact and projected expirated patterns were deposited. Afterwards the hand then moved diagonally downward to the left, wiping away some of the patterns during the movement.
H9BQ9E-5605	An expiration bloodstain pattern with associated flow bloodstains is across the width of the target surface, except for a void space in the approximate center of the image. Bubble rings and mucous strands are present within the larger volumes of blood of the expiration pattern. Flow bloodstains associated with the larger volume stains of the pattern flow towards the bottom edge of the image, with some flows abruptly terminating due to the void. Above the large volume bloodstains of the expiration pattern are hundreds of spatter bloodstains with varying upward and left-to-right directionality. These spatter stains are likely associated with the expiration bloodstain pattern stains. After the expiration pattern had been deposited, numerous areas within the pattern were wiped through by five distinct paths. Perimeter bloodstains within the flow bloodstains and striations within the wipes indicate the wipes' directionality was downward and to the left.
HFFF2F-5605	1. The transfer pattern indicates that the Source was bloodied before coming into contact with the surface. 2. Passive patterns are created by the external force of gravity. The blood has not been subjected to a significant impact force at its origin. 3. The expiration pattern indicates that the lung or airways suffered damage. Bubble rings can be observed in the blood pattern. If there are no bubbles, check that there are loops between the drops. 4. Drip pattern: Dripping characteristic, more than one drop of blood on a surface. 5. Saturation: Blood stain resulting from the accumulation of liquid blood in an absorbent material. The blood absorbed by the material may exhibit characteristics of other stains. 6. Wipe: Characteristic transfer pattern indicating the movement of an object through a pre-existing wet blood stain. 7. Projected pattern: Projection pattern: A blood spatter pattern under hydraulic pressure, usually due to a breach in the circulatory system.
HGPF7M-5601	In item 5, a projected pattern is observed on the vertical plane due to the flow of gravity of the bloodletting event. Within the deposited stain are vacuoles consistent with a expiration pattern. There are also small blood droplets that show directionality consistent with an impact pattern. A possible void is also present within the middle of the stain. The void was present during the initial bloodletting

TABLE 4: Pattern Description
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WebCode-Test	Detailed Pattern Description
	event but was removed prior to the wipe motion. The wipe pattern alters the projected pattern.
HH2CCR-5601	The photograph depicts a repeating series of similar looking bloodstains. These appear wider toward the top of the photo and are linear toward the bottom of the photo. These features can be observed in projected patterns however, there is no information that there was a circulatory system breach. The linear bloodstains can be classified as flow. There is an inconsistency in bloodstaining concentration as there are areas of lighter and darker blood staining. Bubble rings and mucous like strands are also present. Based on these features and the information regarding facial injuries, these stains are classified as an expiration pattern. There are striations, feathering features and perimeter stains. This pattern is classified as a wipe pattern. A lack of blood is observed in the central part of the image. There are three possibilities. This may be a void pattern or blood was not originally deposited in that area or it may be due to the removal of preexisting blood. The latter is supported by the classification of a wipe pattern. There are also small round and elliptical bloodstains around the larger bloodstains. Some of the elliptical stains have directionality. These are classified as spatter bloodstains. In summary, there are overlapping bloodstains and patterns including, altered bloodstains. Based on this, the observed features and the information provided, the pattern types that best describe the image from the options given are expiration pattern, wipe and bubble ring. Other patterns that may be possible are projected pattern and void. Information regarding a breach in the circulatory system is needed for a classification of projected pattern. A clear line (or lines) of demarcation between the bloodstained area and the areas absent of blood is not observed and alteration of preexisting bloodstains prevent the more specific classification of void pattern.
HJF6N3-5605	Expiration patterns, with volume and flow. A wipe alters portions of the left and right major expiration deposits, traversing from the upper right to lower left. Perimeter staining is more pronounced in the flow from the left major expiration deposit, where the wipe crosses. Background spatter, mostly in the upper and right side of the image, appears largely related to the right major expiration deposit. A void is noted in this background spatter, generally between the left and right expiration deposits, and appears to be caused by the object responsible for the noted wipe(s). Apparent ridge detail is noted at portions of the leading edges of the wipe(s), and is potentially associated with the object responsible for the void.
HKBMP4-5605	There is an expiration pattern with bubble rings, as well as flows, which indicate the movement of a volume of blood on a vertical surface due to gravity. Furthermore, there is a wipe with directionality from the upper right corner to the lower left corner.
HND44D-5601	An expiration pattern, with associated flow and spatter stains, is present on the majority of the target. A void is present near the middle of the target adjacent to the bloodstains comprising the expiration pattern. Portions of the bloodstains comprising the expiration pattern are altered with visible perimeter stains, indicating the altered bloodstain pattern is a result of at least one wipe.
HYL3BQ-5601	Numerous flows to the upper and to the right of the image with greater than 100 near-circular and elliptical spatter stains and some linkages distributed throughout. The spatter stains range between less than 1 to 3mm and some have bubble rings. Many of the elliptical spatter stains on the upper periphery have a somewhat radiating distribution. The spatter stains can be further interpeted as a possible expiration pattern. There is a void towards the middle of the image. Some of the flow in the middle of the image have been altered by wipe in a downward and to the left directionality. With regard to the furthest left flow, it appears the flow has occurred, then it was wiped, then another flow has occurred throughout the wiped flow.
JBWVFC-5601	There is an expiration pattern present with flow, bubble rings and mucus strands. Wipe(s) were observed diagonally across the vertical plane resulting in perimeter stains. There is a void present in the center of the vertical plane. This is indicated by the lack of continuation of the flow/spatter stains in the expiration pattern.
JEW9YV-5601	There is an expiration pattern over most of the target. There is a void in some of the expiration pattern on the upper middle and upper right side of the target. A wipe is present through some of the expiration pattern from the upper right side to the lower left corner of the target.

TABLE 4: Pattern Description
Item 5, continued

WebCode-Test	Detailed Pattern Description
JFEXMH-5605	An expiration pattern was found on the poster board. Within this pattern, bloodstains of a diluted appearance were observed, exhibiting downward flow accompanied by bubble rings and mucous strands. Associated spatter stains were also present, some displaying similar dilution as well as bubble rings and mucous strands. Spatter stains located in the upper region exhibited upward directionality in a radiating distribution. Examination of some of the spatter stains revealed an apparent area of convergence near the lower right-hand region. Given this apparent area of convergence, it may be possible that the spatter stains were also deposited via an impact mechanism. A void was noted at the centre of the expiration pattern. Swipes/wipes were observed within the pattern, with the direction of motion towards the lower left-hand corner. Obvious wipes were visible on the left side of the pattern, characterised by perimeter stains along the flows.
JQDTKD-5605	An expiration bloodstain pattern with bubble rings and at least ten downward linear flows was on the posterboard. A void was in roughly the center of the expiration pattern. A diagonal wipe bloodstain started at roughly the center of the expiration pattern and had a directionality down and to the left.
JTGLEC-5601	Spatter stains and flow were observed on the target. Within these bloodstains, bubbles rings and mucous strands were noted. These are all characteristics of an expiration pattern. A void was observed on the middle to upper portion of the staining. A wipe was present between the middle of the pattern and the bottom left side of the target which created multiple perimeter stains in some areas of flow.
JUC4GD-5605	At least one impact pattern is present. Multiple expiration patterns are present with downward flow. Bubble rings and mucous strands (saliva mixed with blood) are present throughout the pattern(s). A combination of wipe and swipe are present through the expiration pattern(s). Edge characteristics are present indicating an altered stain in some of the flow patterns.
JWYNLG-5605	Item 5 shows multiple bloodstain patterns including a projected pattern with a notable volume of blood and bubble rings, also known as an expiration pattern due to the blood being forced out of the body at a high pressure via airflow from a wound, the nose, or mouth. Also present is a wipe where a preexisting stain was disturbed by a wiping motion. Lastly, there appears to be a void pattern in the center and impact pattern patter towards the top.
K7GMQR-5605	I observed an expiration pattern with some level of dilution. There are also numerous small bubble rings, satellite stains, and several areas exhibiting flow. The overall pattern was altered by diagonal wipes through the middle of the pattern producing several perimeter stains with visible edge characteristics. A portion of one wiped area was altered further by flow over the previously wiped area.
K7GUND-5605	1. Saturation "Saturation Stain" - Blood stain resulting from the accumulation of liquid blood in an absorbent material. 2. Wipe "Wipe" - Transfer pattern characteristics that indicate the movement of an object through a pre-existing wet blood stain. 3. Drip "Drip Stain" and "Drip Pattern" - A drop that falls and forms due to the effect of gravity. Characteristic of dripping more than one drop of blood onto a surface. 4. Expiration "Expiration Pattern" - Indicates that the lung or airways have suffered damage. Bubble rings can be observed in the blood pattern. If there are no bubbles, check for connections between the drops. 5. Passive Patterns - bloodstains created by the external force of gravity. The blood has not been subjected to a significant force at the point of origin. Example: dripping, flowing, and pooling. 6. Transfer Patterns - bloodstains created when a blood-wet surface comes into contact with another surface. Example: direct and indirect contact. 7. Projected Patterns - blood stains produced by the release of blood under pressure or impact. Example: arterial, throwing, splatter, expiratory, spatter, and spike.
K8C6RT-5605	This is a complex pattern with projected patterns, bubble rings, a transfer stain, void pattern and wipe pattern within it. The stains in the middle of the photograph that have a larger volume of blood, flow patterns and air bubble/mucous strands are consistent with projected patterns. There is a transfer stain within the right projected pattern. This transfer stain has a oval shape that has detail in the bottom left of the stain but the source is unknown. There is a void pattern between the two projected patterns that extends up into the spatter/bubble rings at the top of the target surface. The item that

TABLE 4: Pattern Description
Item 5, continued

WebCode-Test	Detailed Pattern Description
	caused this void is unknown but was there prior to the wipe pattern, There are at least five linear patterns moving through the projected patterns. These patterns have gone through the pre-existing projected stains indicated by the projected stains being altered. The feathering and lightening of the red color of the blood indicate motion and directionality going from top right to bottom left. These characteristics make the linear stains wipe patterns. Surrounding the projected stains and the wipe patterns are a multitude of smaller spatter stains that have air bubbles in them and some are connected by mucous strands. These stains are bubble ring stains.
KLXKVT-5605	Spatter stains, consistent with an expiration and/or impact pattern were observed on the approximate top half of this area. Stains consistent with an expiration pattern and/or projected pattern were observed on the approximate bottom half of this area. Apparent bubble rings were observed throughout. A multi-pronged void was present within the center of these patterns. A swipe is observed within these patterns, including within the void, and wipes are observed on the left and right portions of the bottom pattern.
KPWWQR-5601	A pattern of diluted, irregular shaped stains with bubble rings, mucus strands, and flows consistent with gravity. This pattern also has over 100 circular and elliptical stains mostly above and on the right-hand side, with a somewhat radial distribution upwards with diameters ranging from approximately less than 1mm to approximately 4mm (most are approximately 1mm). There is an alteration in the center of the pattern that creates a void and the interruption of several of the flow patterns. This alteration has parallel stains with striations and appears to move downward and to the left, with a slight curve down at the bottom of the photo. The 3 flow patterns on the left-hand side of the pattern show perimeter stains in the flow (edges present with middle of flow pattern removed). The left most flow pattern then has a flow pattern that has begun to flow over the altered flow. Consistent with an expiration pattern with flows consistent with gravity. The pattern has been altered by wipe(s) and/or swipe(s).
KTUZGY-5605	There is an expiration pattern identified by the presence of tiny air bubbles within the blood staining, a stringy appearance to some of the blood staining particularly on the right hand side and blood appears to be mixed with a different substance, likely saliva/mucous. The blood staining has run down the wall and has been wiped diagonally from top right to bottom left. There are small and very small blood stains surrounding the larger run stains, some indicating directionality radiating from the centre. There is a void area in the middle of the image that has blood staining wiped, possibly swiped, through the void area.
LAZY4M-5605	Expiration pattern with the presence of bubble rings. Presence of a void area (possibly fingers/hand). Flow patterns formed due to the volume of blood on the target surface under the influence of gravity. As the object (likely a hand) moved off the target surface, wipe patterns were formed through the flow patterns, leaving perimeter stains.
LKHFYF-5605	The primary pattern is a projected pattern with flow excess. The flow stains on the left shows perimeter stains. Lateral movement from right to left and a downward position is indicative of a wipe pattern. Characteristics of an expiration pattern (dilute stains, bubble rings, and mucous strands) are also present. Spatter stains present.
LKJYWX-5605	The primary pattern on the target surface is comprised of small round to elliptical stains in a radiating distribution from 10 o'clock to 3 o'clock. The stains are generally round near the center of the pattern and become progressively elliptical moving outward. Bubble rings (vacuoles), salivary banding, and variation in color/dilution of the stains due to the presence of saliva all support the classification of an Expiration Pattern. Given the mechanism of injury in the scenario provided, multiple strikes to the victim's face indicate the introduction of the blood into the airway. Thus, the classification of Impact Pattern cannot be excluded, as subsequent impact blow(s) delivered to that blood source are a potential mechanism for putting the already oxygenated blood into motion toward the target surface. Large volume stains, from which gravitational flows are present, overlap the smaller stains. These also display bubble rings (vacuoles) that appear frothy in some places, salivary banding, and variation in color/dilution of the stains due to the presence of saliva, also supporting a classification of an Expiration Pattern. Roughly in the center of the Expiration/Impact Patterns is a

TABLE 4: Pattern Description
Item 5, continued

WebCode-Test	Detailed Pattern Description
	void, which resembles the shape of a hand. Consistent with the placement of a hand on the target at the time of stain deposition are five wipes that move through the aforementioned stains from the 1 o'clock to 7 o'clock positions. Though each wipe is an independent trail, they appear to move in tandem and correspond in location to the "finger" voids. Each trail striates and feathers the wet blood through which it moved. The edges of the preexisiting flows of a portion of the large volume Expiration Pattern on the left of the target are also visible. The presence of what appears to be partial friction ridge detail at the upper edge of two of the wipes supports the suggestion of a hand as the mechanism of stain deposition.
LLN6WH-5605	A main expiration pattern is present as noted by the small, elliptical and circular stains with small bubbles within (possibly saliva or air). Victim was reportedly struck in the face. Flow is present as noted by the volume of blood enough to cause movement with gravity (vertical plane downward). A void is present as evidenced by the lack of blood within the expiration pattern in the top middle and top lift-ish areas of the stain. Finally, a wipe is present through the expiration pattern and flow as evidenced by feathered edges, movement through the expiration stain, and flow interrupted.
LTQCGR-5605	Given the background information and characteristics observed on the image provided, I noted a possible Expiration pattern across the width of the image. Within the Expiration pattern I observed suspected Bubble Rings. Surrounding the Expiration pattern in an arc like fashion, I noted possible spatter stains. These spatter stains appear small, numerous, circular and elongated in shape. Within the center area of the image, I observed a possible Void pattern. This Void pattern appears mainly in the center of the image and to the lower left. A likely Wipe pattern is also seen in this image traveling from the right to the bottom left of the image. There appear to be areas of Altered blood stains in the flow from the Expiration pattern on the left side. Stains consistent with apparent Perimeter stains are noted on the left side of the image.
M3RY4H-5605	Two main areas of relatively high volume stains with runs. Characteristic of projected blood but other objective criteria not present to support this. Within these this pattern are air bubbles and linked stains characteristic of expirated blood. Also present is finer spatter radiating from the area of larger stains on the right hand side. Some of these have air bubbles and linking, again characteristic of expirated. Spatter could have originated from same action as high volume stains could could also be separate action. There are wipes through the patterns which have distorted them. This is particularly obvious through the runs. Wipe has been upper left to lower right and could have been using fingers. Some of the runs show skeletonisation indicating partial drying. There is an area free of airborne blood in approximately the middle of the target board. Appears to be a void.
M6YCRB-5605	Expiration pattern causing bubble rings and associated flow. An Impact pattern at the upper part of the photo. A void that is most likely as a result of fingers on the wall prier to the blood pattern creation and Wipe stains as a result of these fingers movement afterwards.
MNCWNE-5605	On the white vertical surface, multiple instances of bloody expirated patterns (Expiration Pattern) can be observed, formed through repeated forceful exhalations. Air bubbles (Bubble Ring) are visible within these patterns. The expelled blood began to flow (Flow) down the vertical surface, while it was smeared by hand (Wipe). In the stain pattern on the left side, there is a noticeable time gap between the deposition and the smearing, allowing the flow patterns to begin drying—perimeter stains (Perimeter Stain) are visible in some areas. However, such signs are not observed in the stain pattern on the right side.A void (Void) caused by a hand is presumed in the area between the stain patterns.
MTQJED-5605	Four patterns observed. Out of the four patterns two obvious patterns are EXPIRATION patterns being the parent stain of some satellite stains and the second pattern is a WIPE pattern following the Expiration pattern. In addition, a void pattern observed within the Expiration pattern . A fourth pattern as an IMPACT pattern on the outer side of the expiration and wipe patterns.
N8JN4L-5601	This is in excess of 200 circular to elliptical shaped stains ranging in size from in excess of 2 mm to sub mm combined with two areas of larger irregular shaped bloodstain deposits with vertical flow down (approx. 200mm) either side of a central void area. Expiration stain with visible linear links formed between stains and small bubbles visible on larger stains with associated vertical Flow. It is

TABLE 4: Pattern Description
Item 5, continued

WebCode-Test	Detailed Pattern Description
	possible that these two larger stains are part of a projected stain (which cannot be excluded) with the central portion deposited on an object which has been removed creating the void. This has subsequently had a wipe through the stain transferring the blood through the central void. The wipe through shows directionality from top right to bottom left, has carried blood from the right through the void in the centre. The five roughly parallel marks visible in the wipe is strongly suggestive that this wipe is probably due to the fingers of a hand passing through the blood although there is insufficient ridge detail to confirm fingers or identify a person.
N9DCMG-5605	An expiration pattern is observed on item 5 (poster board - vertical plane) with a wipe interrupting the pattern. The wipe travels through the expiration pattern from the upper right area in the direction to the lower left of the stain. Additionally, perimeter stains are observed in the expiration stain indicating some amount of time passed between the expiration stain being deposited onto the item and before the wipe occurred.
NB4FBH-5601	The first situation is Splash Pattern, then it begins to Projected Pattern. Finally, it has someone wipe on this pattern, so the last situation will be Wipe Pattern.
NP2PYN-5605	There is an expiration pattern, which includes stains spanning a range of sizes (fine mist-like bloodstains up to larger stains with sufficient volume to produce flow patterns). Many of the bloodstains appear diluted, and there are numerous bubble rings and multiple beaded stains present. There is an apparent void near the middle of the image, where the expiration pattern was not deposited. There are also wipe stains moving down and to the left in the image. These wipes occurred after the expiration and flow patterns, as evidenced by the visible perimeter stains remaining in some of the flow patterns.
NT2TQB-5605	Heavy stains with downward flow and spatter stains were observed. Both stains with flow and spatter stains had bubble rings visible and many stains were connected with mucous strands, indicating an expiration mechanism created these stains. A void was present near the center of the expiration pattern. There were also stains with varying concentration and striations through the center of the image to the lower left corner. Several of the stains with downward flow were wiped through and displayed perimeter staining. The wipes appear to have originated from at least a couple of these perimeter stains (and moved downward/left), while in other areas the downward flow appears to have been wiped through by something already bloody (swipe/wipe). Possible ridge structure was observed in some of the swipes/wipes, indicating a bloodied hand/fingers could have created them.
P2E897-5601	Based on the size, shape and distribution of staining observed on the target surface, an expiration pattern with wipes and void was present.
P73YA8-5605	Bloodstaining consists of: Several large volume bloodstains forming a projected pattern that have run down the target board producing blood flows. Contained within these stains are bubble rings, in my opinion, indicating that the blood had been mixed with air prior to deposition. Some of these large volume bloodstains have been subsequently wiped whilst still wet in a direction from the top right to the lower left of the target board (possibly by a hand, as there are five, approximately finger-width, parallel smears). There are numerous small spatter bloodstains, many with directionality, forming a bloodstain pattern that appears to originate from an area of convergence towards the centre of the target board (where there is also a void). Bubble rings and stringy-like material are visible within this pattern - in my opinion, this indicates that this is an expiration pattern (as opposed to an impact pattern).
P82WTF-5605	In item 5, a projected pattern is observed on the right and left sides of the image. Small vacuoles are observed within the projected pattern, consistent with an expiration pattern as well. A suspected void appears to be in the center of the image, where a wipe went through after the initial incident occurred. Near the top of the image and within the projected pattern, there is an impact pattern with slight directionality.
PB2NWU-5605	The first event is the expiration of blood; all other patterns are secondary to this event. Small bubble rings can be observed throughout the pattern. Flow patterns indicate the large volume of blood that was cast, which then succumbed to the force of gravity. A wipe pattern then altered some of the flow

TABLE 4: Pattern Description
Item 5, continued

WebCode-Test	Detailed Pattern Description
	patterns and a void pattern in the center of the image. It appears that it was a hand that made the wipe.
PF8YRL-5601	Portion of* simulated expiration and/or projected pattern(s) with downward flow. A wipe is located from the top center to the bottom left corner of the photograph. Bubble rings and mucus type strings are located throughout the pattern(s). *bottom and right edges of pattern(s) are cut off in photograph
PFWHUV-5605	The underlying pattern is an expiration pattern on a vertical surface, consistent with blood being released from airflow out of the nose, mouth, or wound. The bloodstain pattern contains enough volume to create multiple downward flow patterns, due to gravity. A wipe pattern, with movement indicated from the upper right towards the lower left, was observed moving through the preexisting wet bloodstain. The wipe pattern is consistent with movement from a hand/ or finger tips. Located above (towards the top of the stain surface), the expiration pattern is a series of accompanying drops with varying directionality, created as a by-product of the initial blood striking the vertical surface, or smaller individual stains striking the surface from the blood source. Bubble rings are observed within some of the individual stains as a result of air within the blood.
PLZ2VL-5605	There is a radiating pattern of spatter which includes bubble rings and possible saliva trails indicating an expiration pattern. Some of the stains include flow from gravity. In the middle of the expiration pattern there is an area with no spatter present indicating a possible void. Through this area, however, are linear smears going through some of the flow stains, creating altered stains, indicating wipes.
PPU3UE-5605	The tile was in a vertical plane. There appears to be an expiration stain due to the appearance of fine spatter and viscous, mucousy blood stains with the presence of bubble rings. Parts of the expiration stain with larger volumes of blood have downward flow. Portions of the flow stains have been altered and have perimeter stains that are an obvious disruption of the stain, which indicate wipe. The center of the pattern has an absence of blood in an area that should be a continuation of the expiration pattern, so there is a void.
PTGXXU-5605	Multiple large volume stains with significant flow distributed across the pattern; multiple clusters of bubble rings observed within both these stains and the accompanying flow, indicating mechanism for this pattern was likely expiration. Stains are roughly 15-20mm diameter (rough approximation due to distorted shape). Stain coloration varies within each stain from bright red to light red. Multiple unaltered flow stains observed on pattern lower right quadrant. Multiple altered flow stains observed on pattern left side and upper right quadrant. A minimum of five roughly linear parallel stains alter pre-existing large volume stains and flow; the spacing and width of these stains is consistent with fingers. Striations and feathering are present indicating wipe direction downward and from upper to lower portion of pattern, with left-most wipe area (#5) crossing on top of adjacent wipe area (#4) at the lower left quadrant of pattern. Apparent friction ridge detail observed in upper area of wipe areas #1, 3, and 5. The central portion of these wipe stains exhibits no bloodstaining (void), indicating an object, likely a hand, was in place when the expiration pattern was deposited. Abundant radiating spatter stains observed surrounding the large volume stains of the expiration pattern. These spatter stains vary in color from dark red to very light red, both circular and elliptical stains are present, and abundant bubble rings are observed. Circular stains approximate diameter predominately <4mm. Elliptical stains indicate upward directionality. Some strand-like connections observed. One apparent hair observed in upper right quadrant.
Q9NVJJ-5605	Areas of irregular shape staining, smooth edge characteristics, elongated shape passive - flow patterns Areas of irregular shape staining, irregular edge characteristics, elongated shape, striations, feathering, some areas of perimeter staining altered - wipe (cannot exclude some staining as swipe) Greater then 50 near-circular and elliptical stains approx <1-2mm in width. Radiating out from central location in photo. Smooth edge characteristics. Some stains appear to have bubble rings and linked by elongated stains (appears to be saliva linkage). Spattered - Expirated pattern Distinct areas lacking staining in otherwise continuous patterns, potentially in a hand/finger shape. Void Overall summary - expiration pattern which appears to have occurred over the top of an object partially obscuring the target surface (possibly a hand/fingers). This object and/or another object has

TABLE 4: Pattern Description
Item 5, continued

WebCode-Test	Detailed Pattern Description
	subsequently made direct contact with movement from the upper right to lower left corner
QA3HV7-5605	This is a complex bloodstain pattern that consists of large volume stains that have a dilute appearance and have numerous associated downward flows. Some of the flow bloodstains were wiped through from generally a diagonal downward direction from right to left which produced altered and perimeter stains. There are numerous elliptical and near circular spatter bloodstains along the right side and upper portion of the image. The elliptical spatter exhibit a radiating directionality, possibly from an impact, that was generally upwards and to the upper left and right corners of the image. Swipe bloodstains were also present near the center of the image. There was also a large area in the center of the image that was void of any spatter bloodstains. Also present within the pattern were expirated bloodstains that exhibited a dilute appearance and also contained saliva strands and bubble rings.
QAM2ZD-5605	Several reddish-brown flow patterns, with circular reddish-brown stains within the flow patterns containing apparent air bubbles and apparent mucous-like reddish-brown strands, areas void of reddish-brown stains containing movement from upper right to lower left through some of the flow patterns, creating perimeter stains, in the middle of the overall pattern, and areas of circular and elliptical reddish-brown apparent impact stains across the top of the overall pattern, ranging in size from ~1.6 millimeters by 2.86 millimeters to under ~0.5 millimeters, with directionality originating from the middle right side of the overall pattern. The shape, size and distribution of the reddish-brown stains in Item 5 are consistent with an expiration pattern and impact pattern, with voids, wipes and bubble rings.
QEFL2V-5605	The bloodstain is described as an expiration pattern, produced by the injuries to the face, and as a result, it ended up on the wall. We should also consider that the wipe pattern occurred after the expiration blood was deposited, as we can observe dry outlines of the blood flow.
QM9BMJ-5601	There are two areas, on the left and right sides of the photograph, of larger volume, irregularly shaped stains with flows below. These areas of staining also have numerous bubble rings present within them and there are also some joined or beaded stains visible. There are numerous, small, circular and oval spatter stains around and above the main areas of staining. In my opinion this pattern has the features of an expiration pattern. In the middle of the expiration pattern are voids. A few areas of bloodstaining have been altered by wiping, creating linear, striated stains, some of which are through the voided area.
QQ9LJJ-5601	The appearance of a blood stain or pattern of blood staining can, in some circumstances, provide detail that allows me to offer an opinion of the type of event or events that created the staining. Therefore, the following definitions will be used in this report: • Expirated Pattern - A blood stain pattern from blood forced by airflow out of the nose, mouth, or a wound. • Spatter stain - A spatter stain results from an airborne blood drop created when an external force is applied to liquid blood. Impacting a bloodied surface, expelling blood through the mouth or nose, or blood being cast off a moving object, are some of the ways spatter stains can be created. • Drip stain - A drip stain results from a falling drop that formed due to gravity. • Impact Spatter – A blood stain pattern resulting from an object striking liquid blood. • Drip pattern - A drip pattern results from a liquid that dripped into another liquid, at least one of which was blood. • Flow – A blood stain resulting from the movement of a volume of blood on a surface due to gravity or movement of the target. • Wipe – An altered stain resulting from an object moving through a pre-existing wet blood stain. There were areas of irregular blood stains with associated downward flows of blood. Around these were small spots of blood and across the top of the photo were small elliptical stains in a radiating pattern. The radiating pattern indicates the direction of travel of the drops of blood when they landed on the surface. In my opinion, the patterns of blood staining were mostly likely due to expirated blood, with associated flows and spatter. However, I cannot exclude that some of the small spots of blood were impact spatter. The larger areas of irregular blood and flows had been altered whilst wet resulting in blood smears across the surface. In my opinion these were from a wipe action in a right to left and downward direction.

TABLE 4: Pattern Description
Item 5, continued

WebCode-Test	Detailed Pattern Description
QRKJQ9-5605	In the center of the picture a void area can be seen, which could have been made by a hand. In the left and the right areas, combinations of projected and expiration patterns (bubbles) with flows are recognizable. Diagonal wipes can be documented with a movement from the middle area of the picture to the bottom left.
RL6F96-5605	In my opinion, this appears to be a relatively high volume of blood which has projected onto the wall causing some smaller satellite stains to be created. The high volume nature of the blood has led to the blood running under gravity. The blood, some of which appears to have partially dried, has been wiped after its deposition, likely in a top right to bottom left direction, creating smears of blood. In my opinion, the smears MAY have been created with the tips of fingers wiping the blood.
RNDKU7-5605	Target has two groupings of expiration patterns present with a void noted between the two groups. Expiration patterns contain bubble rings, mucous strands, and sufficient volume of staining for some flow pattern creation. Towards the top of the target, spatter stains are visible in a radiating distribution from the general center of the target. After staining was deposited on the target, a wipe pattern was created in the area of the void pattern as an object moved through existing staining from upper right to lower left of the target and created altered stains.
RQ4LXA-5605	1- On the entire picture, an expiration pattern, with radially distributed projections converging at the bottom right-hand corner of the image. This pattern creat flows too. Presence of bubble rings and saliva strings on all the pattern. 2- A void in the center of the picture. The shape of the object that created this void may well be a hand. 3- From the center to the bottom left corner, a wipe moving through the expiration pattern. The movement may be oriented from the center of the picture to the bottom left (from right to left and from top to bottom).
RRY6ZB-5605	In the image, an expirated blood pattern is initially observed, apparently consisting of three minimal exhalations and numerous projected droplets surrounding the area. Once the expirated blood is discharged, due to the volume of the substance, it begins to descend by the effect of gravity, forming vertical flow patterns in a downward direction (oxygen bubbles can be seen within the blood). Wipe pattern: Following the aforementioned spatters, a smear is produced by an object with no blood load, resulting in a lateral motion from right to left. Drip trail pattern: The blood load appears to be divided by another type of substance that facilitates its descent, producing a drip trail.
RTR2MJ-5605	Item 5 is a photo with several apparent bloodstains. Two large patterns showing large volume of apparent blood in linear fashion with drips, indicates projected pattern. Areas of these stains show perimeter stains with movement from upper right to bottom left, indicates wipe. Spatter stains ranging in size from approximately 2 mm to sub-mm are located above the large stains, oval to elongated in shape. THe spines of some of the stains indicated an upward directionality of deposition. Area of void in overall pattern appears to be shape of a hand, in addition to the 4-5 lines of the wipe pattern that appears to correspond with hand movement.
RU239H-5601	There are bloodstains within the image that support them being as a result of an expiration mechanism. However, there are distinct differences in the features of the expiration bloodstains. They may be part of the same expiration event or discrete separate expiration events. The differences are the volume of blood and the size and shape of the bloodstains. (An expiration pattern is also supported by the scenario that states the victim was struck several times in the face). One part of the pattern (or discrete expiration) is characterised by small circular and elongated droplets measuring less than 1 mm to approximately 2 mm. These show a general radiating pattern from an area in the lower right corner of the image (ruler in the top left). The radiating pattern extends to the top and right side of the image. A determination of expiration pattern rather than an impact pattern is due to the presence of air vacuoles and some mucus strands that are observed. The other part of the expiration pattern (or discrete expiration) has a larger volume of blood and is characteristic of expiration with less force. The bloodstains in this expiration pattern have irregular shaped smooth edges. The volume of blood is such that rivulets / flows have formed and flowed down the wall. Support for this being an expiration pattern is the same presence of air vacuoles and mucus strands. The expiration pattern(s) have been created / deposited when an object / body part was against /

TABLE 4: Pattern Description
Item 5, continued

WebCode-Test	Detailed Pattern Description
	near to the wall creating a void. This void is positioned approximately in the center of the image. There is a transfer bloodstain that has altered the expiration features with movement observed down and to the left. Due to the volume of blood in the expiration pattern, some further flows have been created over the transfer stain. The transfer bloodstain has five linear features running semi parallel with each other. This feature in conjunction with the general outline of shape of the void provides support for the object creating the void being a hand (although this is not to the exclusion of other objects).
RXMUFE-5605	There is an expiration pattern across the whole image. Within the expiration pattern are bubble rings or air vacuoles and apparent mucous strands. It appears that a larger volume of blood was ejected resulting in larger amorphous bloodstains with downward flow patterns due to gravity. Smaller spatter stains of various shapes and sizes were observed. Some of these spatter stains are circular and some are elliptical which show directionality. Portions of the larger expired bloodstains include wipes because they have been altered, leaving behind perimeter stains. The wipes have striations within the body of their stains and feathered boundaries at the bottom of their stains, which shows downward diagonal movement from right to left. There appears to be a void in the center of the image because it lacks the expiration pattern and spatter stains. Some of the blood has been wiped across the void.
RZ9UD9-5605	Description Item 5: In Image 5, multiple, partially overlapping bloodstains can be observed on the wall. Most prominently visible is an expirated pattern, which exhibits air bubbles as well as amylase strands typical of saliva. Due to gravity, several flow patterns emanate from the expirated pattern. Dominating the pattern and visible on the right side are spatter stains, which appear almost circular at the center of the pattern and become increasingly elliptical toward the periphery, with the latter being directional in nature. In the center of the image, a void is visible that is interrupted by several wipe patterns. These indicate movement toward the lower left, crossing several flow patterns and leaving behind skeletonization of the respective flow stains in those areas. When outlining the edges of the void, a shape becomes apparent that could correspond to a left hand. This is supported by a contact stain, which could represent a dactyloscopic (fingerprint-like) fragment that merges into one of the wipe patterns. When examining the lower portion of the image, the contact stain is located to the left above the second flow pattern from the right (the one that nearly reaches the bottom edge of the image).
T3FWYR-5605	There appears to be a minimum of at least 4 different events. Event 1: Spatter stains are present on the vertical poster board in the upper regions of the image on the left side, center, and right side. The bloodstains range in size from ≤ 1mm in diameter to approximately 3mm in diameter. Most of the bloodstains are in the < 1mm diameter range of size. Some these bloodstains display directions of travel away from the center of the posterboard toward the upper left and right corners. There is an added area of spatter bloodstains deposited on the right side of the posterboard midway between the top right corner and the lower right corner. Most of these spatter bloodstains appear to have round shapes and are ≤ 1mm in diameter. Present in this area are a small number of larger bloodstains ranging in size from > 1mm to approximately 3mm in diameter. Event 2: There are no spatter bloodstains present in the center of the posterboard. This is consistent with there having been an intermediate target present in this area during the spatter event. The intermediate target was removed resulting in a void. Event 3: Large volumes of blood were deposited on the vertical posterboard on the left and right sides of the void. It is not possible to determine if the intermediate target that caused the void was still in place on the posterboard when the large volumes of blood were deposited. All the areas stained with large volumes of blood are accompanied by flow which travels downward toward the bottom of the posterboard. The mechanism for the deposition of these bloodstains is undetermined. Event 4: There is at least one wipe moving through the flows from the large volumes of blood. The direction(s) of the wipes are from the upper regions of the posterboard moving right to left at an angle and downward toward the lower left corner of the posterboard. The flow on the left side of the poster board resumed its downward movement after the wipe that crossed through it. Addiutional observations: There are spatter stains that exhibit bubble rings and some areas that exhibit possible mucus strands. This may be indicative of expiration as the method for deposition of some of the blood on the target substrate. Sequence of events: The sequence of events that occured

TABLE 4: Pattern Description
Item 5, continued

WebCode-Test	Detailed Pattern Description
	is consistent with event 1 happening first creating the spatter bloodstains. The second event may have been the removal of the intermediate target which caused the apparent void. It is not possible to exclude the possibility that the removal of the intermediate target was the third event in the sequence. The third event may have been the deposit of large volumes of blood on the posterboard. It is not possible to exclude the possibility of this having been the second event in the sequence. The fourth event was the wipe(s) through the large volumes of blood and their associated flows.
T3PKXB-5605	Item 5 consists of irregular, elongated bloodstains with numerous smaller circular and elliptical stains (less than 0.5 mm to approximately 3 mm) interspersed with and surrounding the larger volume stains in a radiating distribution. The overall pattern size generally fills the entire frame of the photograph (approximately 300 mm by 230 mm). The center is mostly clear of blood, with lighter linear bloodstains (smeared/striated appearance) which appear to travel diagonally from the top right to the bottom left. The larger volume bloodstains vary in color from light/dilute brownish red to dark red and some show evidence of downward flow due to gravity. Perimeter stains (lines of dried blood where it appears that the main volume has been removed) are present in some of these downward flow areas where the diagonal linear bloodstains cross them. Apparent air bubbles/vacuoles are present within the larger volume irregular elongated bloodstains as well as some of the larger circular and elliptical stains. Thin "strings" (apparent mucus) are also present between/connecting bloodstains. Item 5 appears to be an expiration pattern, which is defined as a bloodstain pattern resulting from blood forced by airflow out of the nose, mouth, or a wound. This is primarily indicated by the presence of the very small blood droplets (those forced out/broken up by air) along with the larger volume stains containing bubbles and mucous strands, as well as the dilute appearance of some areas due to possible saliva mixed with blood. The expiration pattern has also been altered (has characteristics that indicate a physical change has occurred). The altered portion of the bloodstain appears to be a wipe, a type of stain resulting from an object moving through preexisting wet blood. This is indicated by the striated diagonal marks through the center of the pattern and the presence of perimeter staining (an altered bloodstain consisting of its edge characteristics, the central area having been partially or entirely removed)
T3VUUG-5601	There is an expiration pattern distributed over a majority of the image. There are larger expiration bloodstains and numerous smaller spatter bloodstains surrounding them. The size of the smaller spatter bloodstains are approximately sub-mm to 2mm in diameter and some have directionality indicators. There appears to be a void, possibly hand shaped, located centrally within the expiration pattern. The larger expiration bloodstains have enough volume to flow downwards as a result of gravity. There are air bubbles and evidence of dilute streaking present within the expiration bloodstains. Bridging / links are visible between individual expiration bloodstains. Wipe bloodstains are present and run through the expiration bloodstains and flows in a direction from the top right of the image towards the bottom left of the image. These wipes have left perimeter stains, with visible edge characteristics of the original bloodstains remaining.
T7A7A7-5605	The target supports an expiration pattern, supported by bubble rings, downward flow, and suspected mucus strands. Multiple elongated diagonal voids are in the middle of the pattern. Around the voids are wipes through the expiration pattern in the downward-left direction, supported by the presence of perimeter staining and feathering.
TG7HY6-5605	Item 2 shows a pattern that results from the accumulation of liquid blood in an absorbent material, in this case an underwear. Item 3 shows a pattern consisting of a preexisting stain that has been altered by an object moving through it, where the original stain retains its original form. Item 4 shows a pattern resulting from the accumulation of blood that dripped over the same place due to gravity. Item 5 shows three recognizable patterns: the first is an expiration pattern, resulting from the ejection of blood under hydraulic pressure, typically from a breach in the circulatory system. The second one is the presence of bubble rings, related to the first one, consisting of an outline within the bloodstain, resulting from air in the blood. Some mucous strands can also be seen within the pattern. The third one is a wipe pattern, consisting of the alteration of the original expiration and bubble ring patterns from the movement of an object through them.

TABLE 4: Pattern Description
Item 5, continued

WebCode-Test	Detailed Pattern Description
TJ3U3K-5605	Long, roughly parallel voids are centered in and point toward the upper right and lower left corners of the image. These voids are separated by smeared parallel red brown stains with similar angled orientation. Although these smeared stains are visually similar to transfer stains, it is possible that an unstained item (hand???) was in contact with the wall prior to deposition of the bloodstains. Blood distributed along contact points between the item and the wall would then be smeared once the item was set in motion. The definition of transfer (and swipe for that matter) indicates the item is blood-bearing prior to contact with the surface. Altered preexisting stains are located to the left of the voids. These wipes disrupt vertical flow stains and continue down and to the left, reaching that corner of the image. The flow stains originate from possible projected bloodstains at the upper left, which exhibit both volume and some force. Fine air bubbles and some possible mucous strands are present in and amongst these bloodstains. A forceful expiration event cannot be ruled out as a source of the stains in this area. The stains resulting in flow were deposited before the wipes were made. Additional possible projected stains produce vertical flow to the right of the central voids. However, the following variation is present in the bloodstains surrounding the flow stains in this area between the central voids and the right edge of the photograph: -Fine air bubbles are prevalent in most of the heavier stains (common in these proficiency tests for multiple modes of deposition). Some are possible bubble rings. -Randomly curved stringy connections, possible mucous strands, are present between stains. -Numerous minute [<<1mm to approximately 2mm diameters] circular or near circular stains. -Fine to minute stains are faint and possibly dilute. This collection of stains is consistent with an expiration pattern. I would conduct saliva testing on the dilute stains if encountered in the laboratory. Finally, numerous mostly elliptical spatter stains [<1mm to approximately 4mm in length] are prevalent on the upper third of the image and appear to radiate from the middle right portion of the image. The size and distribution of these stains are consistent with an impact spatter pattern. However, a forceful expiration event cannot be ruled out as a possible source of such spatter stains.
TJXC6L-5601	An expiration pattern is located in the middle of the target. It is surrounded by satellite stains and has flow at several areas within the pattern. A wipe appears diagonally between the upper right and the lower left area of the expiration pattern and its flow resulting in some perimeter stains. A void is observed in the middle of the expiration pattern and target.
TNWLD3-5601	Staining in the overall pattern exhibits bubble rings, apparent mucous strands, flow, and a somewhat diluted appearance. Larger stains exhibiting flow are mixed with smaller stains of varying size and shape (irregular, circular, and elliptical). No spines are associated/observed. The pattern is an expiration pattern with bubble rings. Centrally located within the expiration pattern is an area that lacks staining where staining would be expected based on the surrounding stained areas. This is a void. An object moved through the pre-existing expiration pattern. Perimeters of the flow in portions of the expiration pattern are visible. The altered portions of the expiration pattern exhibit striations, smooth and mostly continuous margins, and decreasing stain density. This alteration to the expiration pattern is a wipe.
U38NAG-5601	Photograph, labeled as – Item 5 (Posterboard - vertical plane), of multiple bloodstain deposits on a vertical surface. The deposits of blood (A) were observed primarily on the left side (A1) and right side (A2) of the target surface. The deposit on the left side had an irregular shaped primary stain with multiple flows of bloodstains running down the surface. The bloodstain flows were altered. This was apparent as the center of the bloodstain flows were displaced leaving behind a perimeter stain (A1a). For additional information regarding the displaced bloodstains refer to the description for bloodstain pattern B. The bloodstain deposit on the right side (A2) of the target surface had similar features including an irregular shaped primary stain with bloodstain flows (A2a) running down the target surface. Other features observed included mucous strands (A2b), bubble rings (A2c), and spatter stains (A1b, A2d, and A2e). The bloodstain deposits (A1 and A2) had circular and elongated spatter stains surrounding the primary stains. Tiny circular spatter stains (A2d) were concentrated around A2. Elongated spatter stains (A1b and A2e), varying in size, shape and distribution, were observed above the left and right bloodstain deposits (A1 and A2). These spatter stains had a radial distribution with observable directionality towards the upper right-hand and left-hand corners. Bloodstain pattern A had features consistent with an impact pattern. However, the observation of mucous stands and

TABLE 4: Pattern Description
Item 5, continued

WebCode-Test	Detailed Pattern Description
	bubble rings, observed within the bloodstain deposits, supports that bloodstain pattern A was an expiration pattern. The center of bloodstain pattern A was altered (B). The preexisting bloodstains were displaced in approximately five different areas. These altered areas had striations and feathering features that support directionality from the center to the lower left-hand corner of the target surface. The altered bloodstains of bloodstain pattern B were consistent with a wipe. Due to the bloodstain wipes (B) in the center of the expiration pattern (A), it was difficult to determine if there was a void in the center of the expiration pattern. As a result, the spatter stains were difficult to trace back to their primary stain.
U7NWTA-5605	The target is a wall on a vertical plane. The target has an expirated stain where blood was projected with force causing the accompanying spatter stains around the expirated pattern. Mucosal strands, flow, and air bubbles and bubble rings are also present. The center of the pattern has the presence of a void. This would indicate that something was blocking that portion of the wall when the expirated pattern occurred, but was then moved prior to a wipe occurring which moved towards the left in a downward direction
UQBPE6-5601	Observation #A- An expiration pattern was in the center area of the target. The apparent pattern measured approximately 11 ½" x 9 ¼". The pattern had characteristics of spatter, with no linear orientation. The pattern has a radiating distribution with ringlets or vacuoles. Bubble rings were present within the expiration pattern. A flow was observed as part of the expiration pattern. Observation #B- A void was in the center of the target in the center of Observation "A". An unknown object was present on/adjacent to the wall as the blood associated with Observation "A" was being deposited on the wall. The object was removed or moved away from the wall after deposition of Observation "A". Observation #C- A wipe pattern was observed in the center of the target. An object moved through Observation "A" in a 2 o' clock to 8 o' clock position on the target (upper right to lower left) after the deposition of Observation "A" and after the removal of the objected associated with the void (Observation "B"). Observation "A" occurred after "B" and before "C".
UVQDX2-5601	An expiration pattern is present in the center of the photograph with associated spatter stains, flow, and bubble rings. From the center to the lower left quadrant is a wipe with associated perimeter stains. A void is noted in the center of the target.
VA9NJQ-5605	The target bears a variety of bloodstain patterns. Several large bloodstains are present with flows extending from them. Some of the flows show signs of altered blood, with wipes having occurred through the staining. In some instances the wipes have resulted in only the edges of flows being present. Numerous blood spatters are present with many exhibiting bubble rings. Some stringing is also evident, with overall suggestions of the presence of expirated blood. Some of the spatters on the upper regions of the target exhibit directionality.
VBHCJA-5605	Complex pattern, approximately 250x300mm in size, consisting of a minimum of two events. Pattern A - combination of large irregular stains and small circular/elliptical stains with air bubbles present that are consistent with an expiration stain. The larger irregular stains show an accumulation of blood resulting in flow in the downward direction. Pattern B is a swipe downward, from left to right through pattern A. Event A occurred first based on the skeletonized edges of the blood stains in pattern A where event B swiped through the blood.
VZZT4J-5601	The primary stain is an expiration pattern. Bubble rings, flow, mucous strands, and satellite stains are observed. A wipe can be seen diagonally across the target resulting in some perimeter staining in some of the flows. A void is also observed in the center area of the target.
WLWPF4-5605	Item 5 presents a complex bloodstain pattern composed of several bloodstains' types, covering an area of approximately 30 by 20 centimeters, located on the wall approximately 5 feet from the floor. Among these stains, the following can be distinguished: 1. Expiration pattern 2. Impact pattern 3. Flow pattern 4. Altered Stain – possibly a wipe pattern and a void. The dominant mechanism in the analyzed image is most likely an expiration pattern, visible as a grouping of large volumes of blood, within which the following characteristic features can be observed: • air bubbles and bubble rings - the result of blood being mixed with air as it is being expelled, • linked bloodstains – bloodstains that

TABLE 4: Pattern Description
Item 5, continued

WebCode-Test	Detailed Pattern Description
	are linked together possibly by mucous or salivary strands, often forming a linear pattern, • mist patterns – groupings of many bloodstains in a small area that are 0.5 mm in diameter or less, with some bigger stains also present. In addition, numerous small bloodstains – both round and elliptical in shape – are visible across the entire upper portion of the surface, most measuring approximately no more than 5 mm in length. Many of these stains display clear directionality, suggesting they may have originated from an impact mechanism. This identification is supported by information provided in the report stating that the victim sustained multiple blows to the face. However, it cannot be ruled out that these stains are part of the aforementioned expiration pattern. These two types of spatter mechanism – impact and expiration – may contain very similar types of overall distribution, size ranges of bloodstains, and their shape. Additional information is therefore helpful in this case, such as the results of the victim's examination (was oral/airway bleeding possible?), the location of the stain (could it have been deposited on the surface as a result of expiration?), and the verification of saliva presence in the blood samples. In the case under analysis, as previously noted, the victim was struck in the face, while the stains were located at a height of 5 feet from the ground – therefore, deposition through expiration was possible. The volume of blood most likely deposited as a result of an expirated mechanism was sufficient to produce numerous flow patterns. These patterns appear to have been distorted, most likely due to wiping activity, which resulted in altered stain morphology. It is possible that the wiping occurred more than once, suggesting that the alteration of the stains took place over multiple wiping events. Verification of this hypothesis would require direct examination of the stains under magnification, focusing on edge characteristics and any changes in flow direction. Moreover, in the central part of the trace, there is most likely a void.
X67L9L-5605	Multiple bloodstains and a bloodstain pattern were observed on the wall which were categorized as follows: EXPIRATION PATTERNS were observed across the surface of the wall. The expiration patterns contained radiating satellite spatter, individual and groupings of BUBBLE RINGS, string-like connecting stains (like mucous strands), portions that appeared lighter or having a less concentration of blood, and volume in multiple parent stains resulting in flow stains. Portions of multiple flow stains on the left side of the bloodstained wall contained PERIMETER STAINS. WIPES were observed on the bloodstained wall, occurring mostly where preexisting flow stains were present. The wipes contained feathering and striations and had a directionality from top right to bottom left. SWIPES were observed on the bloodstained wall and contained feathering and striations with a directionality from top right to bottom left. TRANSFER STAINS were observed at multiple locations throughout the bloodstained wall that had recognizable shapes similar in appearance to friction ridge detail. An area of VOID was observed generally in the center of the bloodstained wall. Something appeared to have created the void when the expiration patterns were deposited but was then removed before some of the wipes and swipes were deposited within the void area.
X7DK38-5605	Within the pattern, there was variation in individual stain size ranging from numerous small circular and elliptical stains to a large amorphous stain with flow indicating the deposition of a volume of blood that flowed downward due to gravity. Bubble rings and mucus strands between blood droplets were observed in the pattern. These characteristics are consistent with an expiration pattern. Additionally, perimeter staining was observed within some of the flow pattern. The central portion of these stains had been displaced resulting in striations and feathering moving outward from the original stain, with directionality pointing downwards. This suggest that the expiration pattern was deposited first and allowed to partially dry which led to the formation of the dried perimeter. A subsequent movement then disrupted the still-wet central portions. These features are consistent with a partially dried stain being altered by a wipe or swipe motion.
XEPFMG-5605	Irregular shaped bloodstains with linear flow stains toward the lower portion of the target. Apparent spatter and/or satellite stains on the upper portion of the target with directionality to up, upper right and left. Several bubble rings and apparent mucus strands visible throughout staining. Skeletonization of some flow stains and less dense bloodstaining with feathering through irregular shaped bloodstain in a linear arrangement toward lower left of left side of pattern, indicating wipe. Approximate central area of target lacking spatter stains where otherwise they are present (apparent void). Conclusion: Bloodstaining from a spatter producing event consistent with expiration pattern including flow stains,

TABLE 4: Pattern Description
Item 5, continued

WebCode-Test	Detailed Pattern Description
	wipes and a possible void.
XRYFXZ-5605	Item #5: An exiprated pattern with mucous strands and numerous bubble rings is on the target. Voids are present in a parallel fashion near the center of the target. Wipes are present around the voids and exhibit perimeter staining in several areas.
Y4QPFM-5605	Complex pattern with a wipe in the center of the stain. Vacuoles apparent indicated expirated blood with flow in a non-linear pattern. Edge characteristics observable within the flow from the expirated pattern. Impact spatter with directionality around the top edge of the stain with a radiating distribution.
YFGZN7-5605	As per provided description the event involves the application of force to the face of victim. The presence of air bubbles indicate expiration pattern. Moreover, there is distinct wipe pattern observed from the right to left side. In addition to that, multiple bubble rings were observed at different locations.
YKCPC6-5605	The center area of the pattern has no spatter staining. There are four long thin areas of no staining with a larger area in the center of the pattern. This is a Void. There are circular and elliptical stains extending across the top and right side of the target <1mm-4mm in size. They radiate out with a large convergence area. There is a variation in size distribution and coloration with some stains having bubble rings present with possible saliva strands. This is an Expiration Pattern. There are various areas of varying sized stains all larger than 10mm x 10mm of on-descript shaped stains with smooth margins. They are deposited over the entire area of the posterboard with enough volume to result in flow. The stains vary in coloration and some have bubble rings present and saliva strands. This is an Expiration Pattern and Flow. An approximately 8mm x 12cm stain deposited with a linear arrangement with variation in coloring with striations present and feathering present on the ends of the pattern. This is a Swipe. An approximately 10cm x 20cm stain deposited with a linear arrangement with variation in coloring with striations present Perimeter stains are present on areas of flow indicating an upper right to lower left directionality across the posterboard. This is a Wipe.
YKDKUB-5605	The target surface shows an expiration pattern produced when at least one object was momentarily resting on or in close proximity to the target surface resulting in the formation of voids. Numerous bubble rings were evident and flow patterns also formed due to gravity alone. While in contact with the target surface, an object(s) or surface then moved diagonally downward towards the left through the existing wet blood. This movement caused five parallel wipe patterns to form and also altered flow patterns on the left side of the target resulting in perimeter stains.
YUGWQ6-5605	Expiration patterns with downward flow are noted across the middle of the target. Bubble rings and saliva strands are noted in the patterns. A void is present near the center of the target. A wipe, starting in the area of the void and moving downward and to the left, is observed altering a couple of the expiration patterns and subsequent flow.
Z8ZN8Y-5605	On the white posterboard I can identify Bubble ring, Expiration Pattern and Wipe. The bubble ring is an outline within a bloodstain resulting from air in the blood. The expiration pattern is a bloodstain pattern resulting from blood forced by airflow out of the nose, mouth, or a wound. The wipe is an altered stain resulting from an object moving through a preexisting wet bloodstain.
ZB6A3C-5605	There is an overall pattern of stains seen on the surface made up of smaller spatter stains and larger stains that have enough volume to create flow patterns. Bubble rings are seen in many of the small stains and many of the larger stains and there are indications of blood mixed with another substance. The overall pattern can be classified as an expiration pattern. It is possible that some of the smaller directional stains could be from an impact pattern that would have been near the same origin area as the expiration pattern, but the impact pattern cannot be confirmed. There is also a central void area that has five stains that travel across it that can be classified as wipes and possibly some areas in those same patterns that possibly could be classified as a swipe. A determination on whether the blood was present before the objects travelled through the blood cannot be made with certainty for every stain, but there was blood on the wall prior to the motion for some of the stains. The "swipe" checkbox in the data sheet was not checked due to the general principle for CTS of selecting the best

TABLE 4: Pattern Description
Item 5, continued

WebCode-Test	Detailed Pattern Description
	pattern for a particular stain.
ZD93YV-5601	There is at least one expiration pattern towards the center of the target. The expiration pattern(s) exhibit spatter stains, bubble rings, and possible mucous strands. Bubble rings are also present in some spatter stains. The expiration pattern(s) is disrupted by a void in the middle of it. The expiration pattern(s) and the void have also been disturbed by at least one wipe moving diagonally from the center to the lower left corner of the target.
ZE4L2W-5601	Expiration pattern observed across target with bubble rings, spatter, and associated downward flow. Void observed in center of target. Wipe observed across target. Resulting perimeter stains are visible.
ZE6KU6-5605	The blood pattern on the posterboard has the appearance of being deposited as a result of blood being forced out of the nose and/or mouth i.e. expirated blood. Some of the bloodstains also have air bubbles associated with them i.e. bubble rings. There is a clear void in the centre of the bloodpattern which could have been caused by an object such as a hand being placed on the poster board when the blood was deposited. The blood was sufficiently heavy to run down the posterboard and has been altered afterwards as a result of an object most likely fingers moving through the blood causing a wipe pattern.
ZQYUJZ-5605	A spatter pattern(s) (Area A) was present across the upper and middle right side of the wall. Based on investigative information received, this spatter pattern(s) could be an expiration pattern(s), impact pattern(s) or a combination of both. The middle of the wall was void (Area D) of this spatter staining. At least one expiration pattern with downward flows was present on the upper left (Area B1) and middle right (Area B2) of the wall. Five somewhat parallel wipes (Area C broken further into C1 – C5) that altered portions of patterns B1 and B2 extended between 2 and 8 o'clock in the middle of the wall.
ZRQEKK-5601	The following bloodstain patterns were observed on the board: • Three (3) areas of larger volume irregularly shaped staining were observed on the target with sufficient volume to create flow patterns associated with them. Surrounding these irregularly shaped stains were clusters of circular spatter stains predominantly ≤1 mm in diameter. Possible vacuoles or bubble rings were observed within the flow. Extending from some of these larger volume stains were strand-like extensions. • In addition to the circular spatter stains, elliptical spatter stains (≤2mm) showing a radial distribution were observed above the irregularly shaped large volume stains. • The overall size, shape, distribution and appearance of these stains are suggestive of an expiration and/or impact mechanism. • In the center and right side of the target were areas showing an absence of bloodstaining within the overall patterns, characteristic of a void pattern. • Swipe and wipe patterns indicative of a movement from right to left and downward were also noted from the right-center of the target toward the lower left corner. The wipe patterns caused perimeter staining within some of the flow patterns.
ZTM99A-5601	The main portion of the pattern constitutes an expiration pattern. This pattern is represented by a series of small circular and oval stains primarily on the upper area of the pattern and a series of larger stains with associated flows in the central and lower areas of the pattern. A number of strands of blood with associated beading are present within the pattern which is consistent with an expiration mechanism. A void is present on the upper central area of the pattern indicating that an object, which has been subsequently removed, was up against the surface when the expiration pattern was produced. Given the apparent shape of this void I could not exclude a hand being the object on the surface when the pattern was produced. Whilst the lower and central portions of the expiration pattern have still been wet an object has moved across the surface in a right to left direction resulting in a wipe pattern in this area when blood has been contacted.

Additional Comments

TABLE 5

WebCode-Test	Additional Comments
298GHC-5601	Angle of impact determination was not completed, as our laboratory does not provide this service. Our laboratory considers bubble rings as a characteristic seen in certain types of patterns, not an actual pattern type; however, since it was an option, I checked it since it's part of the description of the overall expiration pattern.
37ZJPV-5605	Section 1 width and length measurements are not in millimeters. They were calculated utilizing PowerPoint and the numbers are a ratio and not actual measurements.
3GZ94C-5601	Angle of impact determinations were not completed, as my laboratory does not provide this service.
3ZYPQG-5605	Re item 2: This pattern and the given responses are a bit challenging. The provider has indicated there is a testable pattern on the poster board. That stain is fairly small and doesn't really meet the standard understanding of a pool, however "bloodstain" is not an option. If the provider wishes to test participants only on the underwear, they should not include the posterboard in the provided images or ensure that the stain is confined to the underwear. The scenario based information provided for images 2-4 is unnecessary given the images provided. The pattern in image 5 is a complex pattern. The answer sheet is ambiguous as it includes both pattern types and features. It is unclear if participants are to select only the check boxes for patterns which represent their final classification of the pattern or if they are to include all options which also reflect the features of the given pattern.
4JLDEU-5605	NOTE - widths and lengths for Item 1 were made through the shape tool's format size information in PowerPoint and were performed on zoomed views of the stains. These sizes may not reflect the original physical stain sizes according to accompanying scales.
664MD8-5601	Unsurprisingly CTS has again failed to provide sufficient images of the entirety of the bloodstain pattern(s), access to the digital image files as well as sufficient context for this portion of the exam. The lack of this information not only substantially impacts examiner ability to accurately and comprehensively assess the pattern(s) it also introduces significant potential for error in the final data. Especially considering test results and data from CTS is being further used in research to evaluate the accuracy of and in some instances repudiate this discipline, CTS truly does the bloodstain pattern analysis practitioner community a grave disservice by its continued dereliction in providing sufficient imagery and contextual information representative of actual casework data. As this has been a documented issue with this test for over 11 years, one can only speculate at the motivations of CTS's willful imperviousness to improvement.
6RU9RZ-5605	For section 2, item 5 pattern description I am using reporting guidelines from the current [Laboratory] Crime Scene Technical Procedures: Stains may be described as wipe patterns when clear alteration of the original stain, such as partial disruption or perimeter staining, is present. In the absence of clear alteration of a blood pattern the stain should be classified as a swipe or a wipe.
7TJ4PR-5601	When transmitting the results, we'd like to have details of how the patterns were created. Would it be possible to know the exact number of participants and their geographical origins? Thank you, Sincerly. [Laboratory]
7VAYVA-5601	Angle of impact determinations were not completed, as my laboratory does not provide this service.
83LJBQ-5605	Caliper Mitutoyo, Model No. CD-6" CS, Serial # 03297987, ICF-08865, CAL. Date: 10-03-23, Due Date: 10-03-28 Section 1: Angle of Impact Determination Practice purpose only, because Division's scope is "Bloodstain Pattern Classification".
8K4D88-5605	Angle of Impact determination is currently not on the ANAB scope for the [Laboratory]. Zero's (0) were added in place of "N/A" due to the system only accepting numerical entries. [Zeros removed from Angle of Impact by CTS to exclude from statistical calculations.]

TABLE 5

WebCode-Test	Additional Comments
94DPEN-5601	Angle of impact determinations were not completed, as my laboratory does not provide this service. My organization does not consider bubble rings to be a reportable pattern, but it is checked because it was observed and it has a corresponding box.
9LBAR3-5601	It is very difficult to do pattern determination when the entirety of the pattern is not present. Cutting off a portion of the pattern does not enable us to properly do our jobs or make accurate determinations; how can we be expected to give an accurate statement when the full pattern is not present? There is no way of knowing what other types of bloodstains could be present, but not visible
AYXNMP-5605	The vision of the division is only identification and classification and not angle determination. In this case I made the angle determination for practical purposes.
CACDKK-5601	Angle of impact determinations were not completed, as my laboratory does not provide this service.
DFAM4H-5601	Angle of impact determinations were not completed, as my laboratory does not provide this service.
DGQLJ2-5601	Angle of impact determinations were not completed, as my laboratory does not provide this service. The use of "Bubble Ring" as a type of bloodstain pattern is not technically correct. Bubble rings are a characteristic that can be found in other bloodstain patterns such as expiration patterns, but they are not patterns in and of themselves.
DLXRW7-5605	There is unexplained dilution within the pattern of image 4. While it was corrected during the open timeframe of the testing, the pattern of interest on image 2 should have initially been listed as the undergarment and the white posterboard should not be listed as part of the target.
DPKPPJ-5601	The Angle of Impact Determination section was not completed, as my laboratory does not provide this service.
DY7VK2-5601	Angle of impact determinations were not completed, as my laboratory does not provide this service. For item 5, bubble rings were noted as a characteristic of the overall expiration pattern, not a pattern itself; however, because it was a listed option to check off, I checked off bubble ring.
EJ6MXK-5605	The vision of the division is only identification and classification and not angle determination. In this case I made the angle determination for practical purposes.
F7FYLK-5605	In section II, neither altered stain nor spatter stain are possible choice to select.
HH2CCR-5601	The angle of impact determination was not performed. This is because the laboratory does not include procedures for the determination of the angle of impact and this is not an analytical procedure that is performed during bloodstain pattern analysis.
HND44D-5601	Angle of impact determinations were not completed, as my laboratory does not provide this service.
JBWVFC-5601	Item1: Angle of impact determinations were not completed, as my laboratory does not provide this service. Item 5: We do not consider bubble rings a type of bloodstain pattern. It is an observable characteristic. However, since it was observed in the expiration pattern, and it was part of the list of patterns, I checked the box for bubble ring.
JEW9YV-5601	Angle of impact determinations were not completed, as my laboratory does not provide this service.
JFEXMH-5605	Item 2 was a saturation stain measuring 7.5 cm by 7 cm found on the undergarment. Item 3 was a wipe. The wipe consisted of a perimeter stain measuring 3 cm in size at the lower left-hand corner, with blood displacement extending diagonally upward toward the upper right-hand corner. Item 4 was found to be more likely a drip pattern than a splash pattern. The bloodstain pattern consisted of a parent stain in an area measuring 6 cm by 4.5 cm surrounded by smaller satellite stains, in a radiating

TABLE 5

WebCode-Test	Additional Comments
	distribution. Some of the satellite stains showed a lighter appearance, indicative that blood dilution had occurred at one stage. The lack of spines on the parent stain and absence of obvious outward directional features on the satellite stains indicated a drip mechanism rather than a splash mechanism.
JTGLEC-5601	Angle of impact determinations were not completed, as my laboratory does not provide this service.
KLXKVT-5605	The instructions for pattern 5 limited analysis to a small subset of the ASB terminology list. When doing casework, if you have a complex pattern with a void in the center, it is not always possible to come to a single definitive pattern type conclusion. When multiple patterns/mechanisms cannot be ruled out, it is necessary to take a step back and conclude the most common pattern type (in this instance, I would have used spatter for the top portion of the image and smear for some movement throughout the patterns since there were features of both swipe and wipe). While there is support that the overall pattern is consistent with an expiration pattern with a void and movement, the void and movement make it so a single conclusion cannot be made. The terms checked off in the terminology list for item 5 are terms that could not be ruled out and should not be be considered individual conclusions for patterns present in the area.
KTUZGY-5605	The first section of this test has not been completed as angle of impact does not feature within our scope of examination.
LKJYWX-5605	Section II_Part 1_Item 2 states, “the target was a white posterboard containing men’s undergarments positioned in the horizontal plane”. I classified this as a Saturation Stain due to the non-spatter configuration, with regular margins, of the accumulation of liquid blood in an absorbent material (the white Fruit of the Loom underwear). However, visible on the posterboard just above the top of the waistband is an amount of blood, displaying regular margins, and some color variation or serum separation, with the darkest part appearing to be connected to the fabric of the waistband. However, is the separation of this stain due to absorption into the posterboard or from wicking up into the fabric? It is unclear as both are possible. Potentially an amount of blood could have been present on the posterboard, deposited by any means, and then the underwear placed it in, causing the blood to wick into the fabric. (And there do appear to be indications on the fabric that the photographed side of the fabric is not the primary side of deposition.) Alternately, blood could have been deposited onto the underwear in such a way that it oversaturated the waistband and then flowed onto the posterboard. At any rate, the stain on the posterboard is unclear and thus, should not be classified, beyond “bloodstain”, which is not applicable. However, if the primary target is in fact the posterboard, and not the underwear, this question could be misconstrued. If, in fact, the intent is for the stain on the underwear to be classified, it would better be stated that “the target was men’s undergarments placed atop white posterboard positioned in the horizontal plane”.
NT2TQB-5605	Width and Length measurements provided in section I were obtained from ellipses drawn in PowerPoint which were utilized to obtain a width/length ratio - not actual measurements of each stain.
P2E897-5601	Angle of impact determinations were not completed as my laboratory does not provide this service.
PLZ2VL-5605	Our laboratory does not do angle calculations, therefore I did not do Item 1.
RNDKU7-5605	NOTE - widths and lengths for Item 1 were made through measurements in PowerPoint (all measurements in cm/mm) and were performed on zoomed views of the stains. These sizes may not reflect the original physical stain sizes according to accompanying scales.
RU239H-5601	Item 2 - Classified as a saturation stain based on resultant behavior on the porous substrate (underwear). The blood may have been present on the substrate and the underwear placed on it or deposited on the underwear in-situ by another mechanism. Item 3 - Classified as a wipe, the initial altered bloodstain appears to be a single drip stain which has partially dried

TABLE 5

WebCode-Test	Additional Comments
RZ9UD9-5605	We have no further comments and thank you for the test. Best regards from [State].
T3FWYR-5605	Width and length measurements of the angle of impact stains were rounded to 3 decimal places for the angle of impact calculations. Angle of impact calculation results were round to a single decimal place. A digital caliper was used for the measurement of the width and length of the angle of impact bloodstains.
T3PKXB-5605	Analyst is currently in training and not yet performing bloodstain pattern analysis on casework.
T7A7A7-5605	PowerPoint was used for Section I measurements for angle of impact. These measurements are in inches rather than mm.
TJXC6L-5601	Angle of impact determinations were not completed, as my laboratory does not provide this service. My laboratory does not recognize bubble rings as a pattern, but as a characteristic that can be observed in certain bloodstain patterns. Since it was an option that could be checked off for Item 5 and that I noted the presence of the bubble rings on this target, I have selected it as per directions given for this part of the test.
TNWLD3-5601	Angle of impact determinations were not completed, as my laboratory does not provide this service.
UVQDX2-5601	Angle of impact determination was not completed as our laboratory does not provide this service.
VZZT4J-5601	Angle of impact determinations were not completed, as my laboratory does not provide this service. Our lab does not consider bubble rings to be a pattern but a characteristic seen in certain patterns; however, I checked it off since it is a characteristic seen in the expiration pattern on item 5.
XRYFXZ-5605	Section 1 width and length measurements are not in millimeters. They were calculated utilizing PowerPoint and the numbers area ration and not actual measurements.
YKCPC6-5605	Bubble Ring is a characteristic and not a pattern. The option of flow was missing for Pattern 5 and should have been included.
ZB6A3C-5605	Having a video of these patterns being made would greatly benefit the laboratories taking these tests. It would be excellent for training and also would allow for Quality Assurance follow up actions that may need to occur.
ZD93YV-5601	Angle of impact determinations were not completed, as my laboratory does not provide this service.
ZE4L2W-5601	Angle of impact determinations were not completed, as my laboratory does not provide this service.
ZQYUJZ-5605	Section 1: PowerPoint used to measure ellipses, so measurements are not true to life size.

-End of Report-
(Appendix may follow)

Collaborative Testing Services ~ Forensic Testing Program

Test No. 25-5601: Bloodstain Pattern Analysis

DATA MUST BE SUBMITTED BY **July 14, 2025, 11:59 p.m. EDT** TO BE INCLUDED IN THE REPORT

Participant Code: U1234A WebCode: RBPJCE

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.

This test is divided into two sections: Angle of Impact Determination and Pattern Description.

Patterns provided in the Pattern Description section of the test include a simulated scenario for each item.

Pattern images provided are simulations and are cropped to meet the purposes of this proficiency test where necessary. Expanded views are not available.

Items Submitted (Sample Pack BSP - Photographs):
Item 1: Angle of Impact Determination (Stains A through E)
Items 2-4: Pattern Description: Part 1
Item 5: Pattern Description: Part 2
Appendix: Suggested Terminology Glossary

Section I: ANGLE OF IMPACT DETERMINATION

Examine bloodstains A-E and report the length and width of each stain along with the calculated angle of impact. For all stains the blood was dropped from a pipette onto white posterboard targets at predetermined angles from the vertical.

Please report a single value for each measurement/calculation, not a range of values.

Report your measurements in accordance with your laboratory's requirement for significant figures. Please note that answers will be rounded to two decimal places in the Summary Report.

Stain	Width (mm)	Length (mm)	Angle of Impact (degrees)
A			
B			
C			
D			
E			

Section II: PATTERN DESCRIPTION, PART 1

NOTE: The Pattern Description section is divided into two parts. Please read the instructions carefully prior to filling out the data sheet.

Single Pattern Recognition: For each of the following items, indicate the pattern type that best describes the image. While you can select multiple pattern types if needed, please only select those that are most representative of your analysis. Although you may use different terminology in your casework, in order to standardize responses for this exercise, please make your selection using the terminology provided.

Item 2: This pattern was located on the floor of the victim's bedroom, amidst scattered clothing items. The victim was found unconscious within the adjacent bathroom. A knife was observed embedded in the victim's right arm. (The target was a white posterboard containing men's undergarments positioned in the horizontal plane.)

☐ Bubble ring	☐ Expiration Pattern	☐ Splash Pattern
☐ Cast-off Pattern	☐ Impact Pattern	☐ Swipe
☐ Drip Pattern	☐ Pool	☐ Transfer Stain
☐ Drip Stain	☐ Projected Pattern	☐ Void
☐ Drip trail	☐ Saturation Stain	☐ Wipe

Item 3: This pattern was located on the floor of a nightclub. Investigative information indicated a physical altercation involving two individuals occurred at this location. One individual reportedly sustained a single stab wound and subsequently ran from the scene immediately after the altercation. (The target was a white posterboard positioned in the horizontal plane.)

☐ Bubble ring	☐ Expiration Pattern	☐ Splash Pattern
☐ Cast-off Pattern	☐ Impact Pattern	☐ Swipe
☐ Drip Pattern	☐ Pool	☐ Transfer Stain
☐ Drip Stain	☐ Projected Pattern	☐ Void
☐ Drip trail	☐ Saturation Stain	☐ Wipe

Item 4: This pattern was located outside of the victim's home. Investigative information indicates that a physical altercation took place involving an unknown assailant that came up to the victim from behind and struck the victim in the head with an unknown object, resulting in a laceration. (The target is a white posterboard positioned in the horizontal plane.)

☐ Bubble ring	☐ Expiration Pattern	☐ Splash Pattern
☐ Cast-off Pattern	☐ Impact Pattern	☐ Swipe
☐ Drip Pattern	☐ Pool	☐ Transfer Stain
☐ Drip Stain	☐ Projected Pattern	☐ Void
☐ Drip trail	☐ Saturation Stain	☐ Wipe

Section II: PATTERN DESCRIPTION, Part 2

Note: This part of the test is not a reconstruction of a scenario, but simply a test of pattern recognition and description.

Recognition and Description: For the following item, please indicate the pattern type(s) that best describe the image and write a brief description using the Suggested Terminology Glossary provided in the Appendix. Although you may use different terminology in your casework, in order to standardize responses for this exercise, please make your pattern selection(s) from the options provided and write your description using the suggested terminology.

Item 5: This pattern was located on the wall in the hallway of the deceased victim's residence approximately 5 feet from the floor. Investigative information indicates that a physical altercation occurred where the victim appeared to have been struck several times in face. The victim's body was found lying on the floor in the hallway near the stain on the wall. (The target is a white posterboard positioned in the vertical plane.)

☐ Bubble ring	☐ Expiration Pattern	☐ Splash Pattern
☐ Cast-off Pattern	☐ Impact Pattern	☐ Swipe
☐ Drip Pattern	☐ Pool	☐ Transfer Stain
☐ Drip Stain	☐ Projected Pattern	☐ Void
☐ Drip trail	☐ Saturation Stain	☐ Wipe

Brief Pattern Description

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

Additional Comments

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

Appendix: Suggested Terminology Glossary*

Accompanying Drop
A small blood drop produced as a by-product of drop formation.

Altered Stain
A bloodstain with characteristics that indicate a physical change has occurred.

Angle of Impact
The angle (alpha), relative to the plane of a target, at which a blood drop strikes the target.

Area of Convergence
The space in two dimensions to which the directionalities of spatter stains can be retraced to determine the location of the spatter producing event.

Area of Origin
The space in three dimensions to which the trajectories of spatter can be utilized to determine the location of the spatter producing event.

Backspatter Pattern
A bloodstain pattern resulting from blood drops which can be produced when a projectile creates an entrance wound.

Blood Clot
A gelatinous mass formed by a complex mechanism involving red blood cells, fibrinogen, platelets, and other clotting factors.

Bloodstain
A deposit of blood on a surface.

Bloodstain Pattern
A grouping or distribution of bloodstains that indicates through regular or repetitive form, order, or arrangement the manner in which the pattern was deposited.

Bubble Ring
An outline within a bloodstain resulting from air in the blood.

Cast-off Pattern
A bloodstain pattern resulting from blood drops released from an object due to its motion.

Cessation Pattern
A bloodstain pattern resulting from blood drops released from an object due to its abrupt deceleration.

Directional Angle
The angle (gamma) between the long axis of a spatter stain and a defined reference line on the target.

Directionality
The characteristic of a bloodstain that indicates the direction blood was moving at the time of deposition.

Drip Pattern
A bloodstain pattern resulting from a liquid that dripped into another liquid, at least one of which was blood.

Drip Stain
A bloodstain resulting from a falling drop that formed due to gravity.

Drip Trail
A bloodstain pattern resulting from the movement of a source of drip stains between two points.

Edge Characteristic
A physical feature of the periphery of a bloodstain.

Expiration Pattern
A bloodstain pattern resulting from blood forced by airflow out of the nose, mouth, or a wound.

Flow
A bloodstain resulting from the movement of a volume of blood on a surface due to gravity or movement of the target

Forward Spatter Pattern
A bloodstain pattern resulting from blood drops which can be produced when a projectile creates an exit wound.

Impact Pattern
A bloodstain pattern resulting from an object striking liquid blood.

Insect Stain
A bloodstain resulting from insect activity.

Parent Stain
A bloodstain from which a satellite stain(s) originated.

Perimeter Stain
An altered stain consisting of its edge characteristics, the central area having been partially or entirely removed.

Pool
A bloodstain resulting from an accumulation of liquid blood on a surface.

Projected Pattern
A bloodstain pattern resulting from the ejection of blood under hydraulic pressure, typically from a breach in the circulatory system.

Satellite Stain
A smaller bloodstain that originated during the formation of the parent stain as a result of blood impacting a surface.

Saturation Stain
A bloodstain resulting from the accumulation of liquid blood in an absorbent material.

Serum Stain
The stain resulting from the liquid portion of blood (serum) that separates during coagulation.

Spatter Stain
A bloodstain resulting from an airborne blood drop created when external force is applied to liquid blood.

Splash Pattern
A bloodstain pattern created from a large volume of liquid blood falling onto a surface.

Swipe
A bloodstain resulting from the transfer of blood from a blood-bearing surface onto another surface, with characteristics that indicate relative motion between the two surfaces.

Target
A surface onto which blood has been deposited.

Transfer Stain
A bloodstain resulting from contact between a blood-bearing surface and another surface.

Void
An absence of blood in an otherwise continuous bloodstain or bloodstain pattern.

Wipe
An altered stain resulting from an object moving through a preexisting wet bloodstain.

* As established by the AAFS Standards Board (ASB) - 2017

RELEASE OF DATA TO ACCREDITATION BODIES

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

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

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

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

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

ANAB Certificate No.

A2LA Certificate No.

Step 2: Complete the Laboratory Identifying Information in its entirety

Authorized Contact Person and Title

Laboratory Name

Location (City/State)