



Footwear Imprint Evidence

Test No. 26-5331/5 Summary Report

Each sample pack consisted of either printed photographs (5331) or digital images (5335) of seven questioned imprints and photographs of two recovered shoe soles and test imprints made with those shoes. Participants were asked to compare the recovered shoe soles and their known imprints with the questioned imprints and report their findings. Data were returned from 143 participants (67 for 5331 and 76 for 5335) and are compiled into the following tables:

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

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

Manufacturer's Information

Each sample pack contained photographs in either a physically printed format or as a digitally downloadable file. Images consisted of a recovered pair of shoes, inked exemplars of the recovered shoes, and questioned footwear imprints. Participants were asked to compare the recovered shoe soles and their known imprints with the questioned imprints and report their findings.

SAMPLE PREPARATION: The shoes used in this test had been worn frequently over the course of more than two months. At the time of sample preparation, the soles of the shoes were cleaned of any debris.

KNOWN EXEMPLARS: Item K1a is a photograph of the soles of the recovered shoes lit from above. Items K1b and K1c are photographs of the soles lit with oblique lighting. Items K1d-K1g are photographs of known imprints made with the recovered shoes; the imprints were created by coating the sole of each shoe with ink and producing individual impressions on white paper. The imprints on K1d and K1e were created by rolling the toe and heel areas of each shoe separately by hand. The heels were placed above their respective toes to distinguish these imprints from K1f and K1g. The imprints on K1f and K1g were produced by having the owner wear the shoes and walk across a stack of paper.

QUESTIONED IMPRINTS: Questioned imprints were created by coating the sole of each shoe with ink and having the wearer walk across the substrates.

SAMPLE PACK ASSEMBLY: 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.

Preparation Information					
Imprint	Substrate	Shoe Type	Manufacturer - Size (U.S.)	Left/Right	Association
Q1	Sandpaper	Sneakers	New Balance - 7.5	L	(K1)
Q2	Sandpaper	Sneakers	New Balance - 7.5	R	(K1)
Q3	Sandpaper	Sneakers	New Balance - 8.5	L	(Not Provided)
Q4	Ceramic Tile	Sneakers	New Balance - 8.5	L	(Not Provided)
Q5	Ceramic Tile	Sneakers	New Balance - 8.5	R	(Not Provided)
Q6	Cardboard	Sneakers	New Balance - 8.5	R	(Not Provided)
Q7	Cardboard	Sneakers	New Balance - 7.5	R	(K1)

Summary Comments

This test was designed to allow participants to assess their proficiency in footwear imprint examination and comparison. Participants were supplied with physical photographs (5331) or digital images (5335). Two of the questioned imprints were made by the suspect's right shoe (Q2, Q7). One questioned imprint (Q1) was made by the suspect's left shoe. Four questioned imprints (Q3, Q4, Q5, and Q6) were made by shoes for which photographs were not provided. Refer to the Manufacturer's Information for preparation details.

Participants were asked to report using a seven-point conclusion scale adapted from the SWGTREAD Range of Conclusion standard. For those imprints that were associated with the suspect shoes (K1), all responses of association (A-D) were tallied together to determine the consensus. For those imprints that were not associated with the suspect shoes, all responses of non-association (F-G) were tallied together to determine the consensus.

Of the 143 responding participants, 135 (94%) reported all associations/exclusions and left/right orientations consistent with the manufacturer's preparation information and consensus results. Eight participants were inconsistent in print association for one or more questioned imprints and one participant provided an inconsistent left/right orientation for Q2. No participants reported inconclusive (E) results for the association imprints (Q1, Q2, Q7). One participant reported an exclusion for Q7, with no supporting conclusions.

For the non-association imprints (Q3-Q6), four participants in Q3 and Q4 and two participants in Q5 and Q6 reported some or limited association of class characteristics between the questioned imprints and known exemplars. Some participants cited that imprints Q2-Q6 exhibited some similar class characteristics with significant limiting factors such as insufficient detail. Two participants reported inconclusive (E) for one or more of these questioned imprints. One participant reported the highest degree of association for Q6.

Examination Results

Indicate the results of your comparisons of the recovered shoes with the questioned imprints.

TABLE 1a (Sandpaper)

Questioned Imprints							
WebCode- Test	<u>Q1</u>		<u>Q2</u>		<u>Q3</u>		
	Conclusion	L/R	Conclusion	L/R	Conclusion	L/R	
24233Q-5335	A	L	A	R	G		
26XL6R-5335	A	L	A	R	G		L
2AP46P-5331	A	L	A	R	G		
2D9X7W-5335	A	L	A	R	G		
2HHEEK-5331	A	L	A	R	G		
2PK8MU-5331	A	L	A	R	G		
2VR2GQ-5331	A	L	A	R	G		
2ZHBRN-5335	A	L	A	R	G		L
3DPGHG-5331	A	L	A	R	G		
3URBWT-5331	A	L	A	R	G		
42TMTQ-5331	A	L	A	R	G		
4FP3TJ-5335	A	L	A	R	G		
4Q6XMP-5335	A	L	A	R	G		
4R2EZM-5335	A	L	A	R	G		L
4U6AJP-5335	A	L	A	R	G		
4V2PVM-5331	A	L	A	R	G		
63V64Q-5331	A	L	A	R	G		

TABLE 1a (Sandpaper)

Questioned Imprints							
WebCode- Test	<u>Q1</u>		<u>Q2</u>		<u>Q3</u>		
	Conclusion	L/R	Conclusion	L/R	Conclusion	L/R	
68TLGK-5331	A	L	A	R	G		
6L6AJM-5335	A	L	A	R	G		
6W8HAL-5331	A	L	A	R	G		
7AVQME-5335	A	L	A	R	F	L	
7KRY7G-5331	B	L	B	R	G	L	
7TL6ZH-5331	A	L	A	R	E	L	
8GTVZF-5331	A	L	A	R	G		
8QDATJ-5331	A	L	A	R	G		
8Z6KCR-5335	A	L	A	R	C	L	
8ZKN3D-5335	A	L	A	R	G	L	
98XDYC-5331	A	L	A	R	G		
99TV2D-5331	A	L	A	R	G		
9LJPBL-5331	A	L	A	R	G		
9MUGHG-5331	A	L	A	R	G		
9R28J4-5335	A	L	B	R	G		
9R4UZF-5335	A	L	A	R	G		
9UURWM-5335	A	L	A	R	G		
9VPAYN-5335	A	L	A	R	G	L	

TABLE 1a (Sandpaper)

Questioned Imprints							
WebCode- Test	<u>Q1</u>		<u>Q2</u>		<u>Q3</u>		
	Conclusion	L/R	Conclusion	L/R	Conclusion	L/R	
9YNNLD-5331	B	L	B	R	G		
ADJPCJ-5335	A	L	A	R	G		
ADYYGE-5331	A	L	A	R	G	L	
AHBLD7-5335	A	L	A	R	G		
AHQ6X4-5335	A	L	A	R	G		
ANK3ND-5335	A	L	A	R	G	L	
B2LXKK-5335	A	L	A	R	G		
BHU3TH-5331	A	L	A	R	G		
BLTEPH-5331	A	L	A	R	G		
BQ9P3M-5335	A	L	A	R	G		
BYC9UG-5335	A	L	B	R	G		
C6H2PC-5335	A	L	A	R	G		
CDDXVM-5331	B	L	B	R	G		
CGC9QM-5331	B	L	B	R	G		
D9CHEB-5335	A	L	A	R	G	L	
DKAA7B-5335	B	L	B	R	G	L	
DV8WD8-5331	B	L	D	R	D	L	
E2RE89-5331	A	L	A	R	G		

TABLE 1a (Sandpaper)

Questioned Imprints							
WebCode- Test	<u>Q1</u>		<u>Q2</u>		<u>Q3</u>		
	Conclusion	L/R	Conclusion	L/R	Conclusion	L/R	
E6RQ39-5335	B	L	B	R	G		
ELL9ZJ-5335	A	L	B	R	G	L	
ENJW9E-5331	A	L	A	R	G		
EQF3Z7-5335	A	L	A	R	G		
F97XND-5335	A	L	A	R	G		
F97ZDH-5331	A	L	A	R	G		
FFNFWF-5331	B	L	B	R	F	L	
FJRY79-5331	A	L	A	R	G		
GDFDVG-5335	A	L	A	R	G		
GWTV2F-5335	A	L	A	R	G		
H2LG9A-5331	A	L	A	R	G		
H66BAF-5335	A	L	A	R	G		
H92ZR9-5331	A	L	A	R	G		
HAWJUA-5335	A	L	A	R	G		
HPMPGA-5335	B	L	B	R	F		
HT8HTC-5331	A	L	A	R	G		
HUJ82G-5335	A	L	A	R	G		
HZ6A27-5335	A	L	A	R	G	L	

TABLE 1a (Sandpaper)

Questioned Imprints							
WebCode- Test	<u>Q1</u>		<u>Q2</u>		<u>Q3</u>		
	Conclusion	L/R	Conclusion	L/R	Conclusion	L/R	
J2VV83-5335	A	L	A	R	G		
JFR8F7-5335	A	L	A	R	G	L	
JW77V6-5331	A	L	A	R	G		
K376JZ-5331	A	L	A	R	G		
K4JGLB-5335	A	L	A	R	G		
KTKTL2-5331	A	L	A	R	G		
KY4798-5335	A	L	A	R	G		
KZZMK4-5335	B	L	B	R	G		
LCMXN2-5331	A	L	A	R	G	L	
LECK3A-5335	A	L	A	R	G		
LWDABZ-5335	A	L	A	R	G		
M7F6QB-5335	B	L	A	L	C	L	
MRXYXW-5331	A	L	B	R	G		
NKCJQ6-5331	A	L	A	R	G		
NVD7H2-5331	A	L	A	R	G		
NVTCV7-5331	A	L	A	R	G	L	
PCF3E7-5331	A	L	A	R	G		
PKVMY6-5331	A	L	A	R	G		

TABLE 1a (Sandpaper)

Questioned Imprints							
WebCode- Test	<u>Q1</u>		<u>Q2</u>		<u>Q3</u>		
	Conclusion	L/R	Conclusion	L/R	Conclusion	L/R	
PKVPNA-5331	A	L	A	R	G	L	
PRTE8Y-5335	A	L	A	R	G		
PW3RNX-5331	A	L	A	R	G		
PYAWFZ-5331	A	L	A	R	G		
Q6BV4V-5331	A	L	A	R	G		
Q9W9DY-5331	B	L	B	R	G		
QGQD8Z-5331	A	L	A	R	G		
QRNGBU-5335	A	L	A	R	G		
QTJZDV-5331	B	L	B	R	G		
QX9J9X-5335	A	L	A	R	G		
R3XHZY-5335	A	L	A	R	G	L	
R3YFAU-5331	A	L	A	R	G		
R4UYCV-5335	A	L	B	R	F		
R8VXV2-5331	A	L	A	R	G		
REBHWR-5335	A	L	A	R	G		
RJ9XRU-5335	A	L	B	R	G	L	
RPD3WY-5335	A	L	A	R	G		
RZVKQR-5335	A	L	A	R	G	L	

TABLE 1a (Sandpaper)

Questioned Imprints							
WebCode- Test	<u>Q1</u>		<u>Q2</u>		<u>Q3</u>		
	Conclusion	L/R	Conclusion	L/R	Conclusion	L/R	
TGVU93-5331	A	L	A	R	G		
TM7VFR-5335	A	L	A	R	G		
TM7X6W-5331	A	L	B	R	G		
TQ3ML4-5335	A	L	A	R	G		
TZPPKQ-5335	A	L	A	R	G		
UAB48T-5331	A	L	A	R	G		
UDBF4T-5335	A	L	A	R	G		
UGUGZZ-5335	A	L	B	R	G		
UHZYYW-5335	A	L	A	R	G		
V4YM4X-5331	A	L	B	R	G		
V7VTUP-5335	A	L	A	R	G		
VAQMRQ-5331	B	L	B	R	G		
VLK2P3-5335	A	L	A	R	G		
VMGG3Y-5335	A	L	A	R	G		
WA6HMX-5335	A	L	A	R	G		
WBZYYU-5331	B	L	D	R	C	L	
X7FTFP-5335	A	L	B	R	G	L	
XBTGCH-5335	A	L	A	R	F		

TABLE 1a (Sandpaper)

Questioned Imprints							
WebCode- Test	<u>Q1</u>		<u>Q2</u>		<u>Q3</u>		
	Conclusion	L/R	Conclusion	L/R	Conclusion	L/R	
XEZM2M-5335	A	L	A	R	G		
XN283U-5335	A	L	A	R	G		
XPXNER-5331	A	L	A	R	G		
XV3JXR-5331	A	L	A	R	G		
XVYZBN-5331	A	L	A	R	G		
Y648PN-5335	A	L	A	R	G		
Y6JD4T-5335	A	L	B	R	G		
YCLMAK-5335	A	L	A	R	G		
YF283R-5331	A	L	A	R	G		
YGVZRJ-5335	A	L	A	R	G		
YJK34Y-5331	A	L	A	R	G		
YTQ64Q-5331	A	L	A	R	G		
YULM7R-5331	A	L	A	R	G		
YX7EGU-5331	A	L	A	R	G		
Z3CHWU-5335	A	L	A	R	G		
ZPQ3TV-5335	A	L	A	R	G		L
ZQHEEM-5335	A	L	A	R	G		
ZYRPLR-5335	A	L	A	R	E		

Response Summary - Table 1a (Sandpaper)						Participants: 143 [No Response: 0]	
	Q1 Conc.	L/R		Q2 Conc.	L/R	Q3 Conc.	L/R
Identification (A)	128 (89.5%)	L: 143 (100.0%)		118 (82.5%)	L: 1 (0.7%)	0 (0.0%)	N/A for non-assoc.
High Degree of Assoc. (B)	15 (10.5%)	R: 0 (0.0%)		23 (16.1%)	R: 142 (99.3%)	0 (0.0%)	
Association (C)	0 (0.0%)			0 (0.0%)		3 (2.1%)	
Limited Assoc. (D)	0 (0.0%)			2 (1.4%)		1 (0.7%)	
Inconclusive (E)	0 (0.0%)			0 (0.0%)		2 (1.4%)	
Non-Assoc. (F)	0 (0.0%)			0 (0.0%)		5 (3.5%)	
Exclusion (G)	0 (0.0%)			0 (0.0%)		132 (92.3%)	

Examination Results

Indicate the results of your comparisons of the recovered shoes with the questioned imprints.

TABLE 1b - (Ceramic Tile)

Questioned Imprints					
WebCode- Test	<u>Q4</u>		<u>Q5</u>		
	Conclusion	L/R	Conclusion	L/R	
24233Q- 5335	G		G		
26XL6R- 5335	G	L	G	R	
2AP46P- 5331	G		G		
2D9X7W- 5335	G		G		
2HHEEK- 5331	G		G		
2PK8MU- 5331	G		G		
2VR2GQ- 5331	G		G		
2ZHBRN- 5335	G	L	G	R	
3DPGHG- 5331	G		G		
3URBWT- 5331	G		G		
42TMTQ- 5331	G		G		
4FP3TJ- 5335	G		G		
4Q6XMP- 5335	G		G		
4R2EZM- 5335	G	L	G	R	
4U6AJP- 5335	G		G		
4V2PVM- 5331	G		G		
63V64Q- 5331	G		G		

TABLE 1b - (Ceramic Tile)

Questioned Imprints					
WebCode- Test	<u>Q4</u>		<u>Q5</u>		
	Conclusion	L/R	Conclusion	L/R	
68TLGK-5331	G		G		
6L6AJM-5335	G		G		
6W8HAL-5331	G		G		
7AVQME-5335	G	L	G	R	
7KRY7G-5331	G	L	G	R	
7TL6ZH-5331	E	L	G	R	
8GTVZF-5331	G		G		
8QDATJ-5331	G		G		
8Z6KCR-5335	D	L	D	R	
8ZKN3D-5335	G	L	G	R	
98XDYC-5331	G		G		
99TV2D-5331	G		G		
9LJPBL-5331	G		G		
9MUGHG-5331	G		G		
9R28J4-5335	G		G		
9R4UZF-5335	G		G		
9UURWM-5335	G		G		
9VPAYN-5335	G	L	G	R	

TABLE 1b - (Ceramic Tile)

Questioned Imprints					
WebCode- Test	<u>Q4</u>		<u>Q5</u>		
	Conclusion	L/R	Conclusion	L/R	
9YNNLD-5331	G		G		
ADJPCJ-5335	G		G		
ADYYGE-5331	G	L	G	R	
AHBLD7-5335	G		G		
AHQ6X4-5335	G		G		
ANK3ND-5335	G	L	G	L	
B2LXKK-5335	G		G		
BHU3TH-5331	G		G		
BLTEPH-5331	G		G		
BQ9P3M-5335	G		G		
BYC9UG-5335	G		G		
C6H2PC-5335	G		G		
CDDXVM-5331	G		G		
CGC9QM-5331	G		G		
D9CHEB-5335	G	L	G	R	
DKAA7B-5335	G	L	G	R	
DV8WD8-5331	D	L	D	R	
E2RE89-5331	G		G		
E6RQ39-5335	G		G		

TABLE 1b - (Ceramic Tile)

Questioned Imprints					
WebCode- Test	<u>Q4</u>		<u>Q5</u>		
	Conclusion	L/R	Conclusion	L/R	
ELL9ZJ-5335	G	L	G	R	
ENJW9E-5331	G		G		
EQF3Z7-5335	G		G		
F97XND-5335	G		G		
F97ZDH-5331	G		G		
FFNFWF-5331	F	L	F	R	
FJRY79-5331	G		G		
GDFDVG-5335	G		G		
GWTV2F-5335	G		G		
H2LG9A-5331	G		G		
H66BAF-5335	G		G		
H92ZR9-5331	G		G		
HAWJUA-5335	G		G		
HPMPGA-5335	F		F		
HT8HTC-5331	G		G		
HUJ82G-5335	G		G		
HZ6A27-5335	G	L	G	R	
J2VV83-5335	G		G		

TABLE 1b - (Ceramic Tile)

Questioned Imprints					
WebCode- Test	<u>Q4</u>		<u>Q5</u>		
	Conclusion	L/R	Conclusion	L/R	
JFR8F7- 5335	G	L	G	R	
JW77V6- 5331	G		G		
K376JZ- 5331	G		G		
K4JGLB- 5335	G		G		
KTKTL2- 5331	G		G		
KY4798- 5335	G		G		
KZZMK4- 5335	G		G		
LCMXN2- 5331	G	R	G	R	
LECK3A- 5335	G		G		
LWDABZ- 5335	G		G		
M7F6QB- 5335	G		G		
MRXYXW- 5331	G		G		
NKCJQ6- 5331	G		G		
NVD7H2- 5331	G		G		
NVTCV7- 5331	G	L	G	R	
PCF3E7- 5331	G		G		
PKVMY6- 5331	G		G		
PKVPNA- 5331	G	L	G	R	
PRTE8Y- 5335	G		G		

TABLE 1b - (Ceramic Tile)

Questioned Imprints					
WebCode- Test	<u>Q4</u>		<u>Q5</u>		
	Conclusion	L/R	Conclusion	L/R	
PW3RNX-5331	G		G		
PYAWFZ-5331	G		G		
Q6BV4V-5331	G		G		
Q9W9DY-5331	G		G		
QGQD8Z-5331	G		G		
QRNGBU-5335	G		G		
QTJZDV-5331	G		G		
QX9J9X-5335	G		G		
R3XHZY-5335	G	L	G	R	
R3YFAU-5331	G		G		
R4UYCV-5335	G		F		
R8VXV2-5331	G		G		
REBHWR-5335	G		G		
RJ9XRU-5335	G	L	G	R	
RPD3WY-5335	G		G		
RZVKQR-5335	G	L	G	R	
TGVU93-5331	G		G		
TM7VFR-5335	G		G		

TABLE 1b - (Ceramic Tile)

Questioned Imprints					
WebCode- Test	<u>Q4</u>		<u>Q5</u>		
	Conclusion	L/R	Conclusion	L/R	
TM7X6W-5331	G		G		
TQ3ML4-5335	G		G		
TZPPKQ-5335	G		G		
UAB48T-5331	G		G		
UDBF4T-5335	G		G		
UGUGZZ-5335	G		G		
UHZYYW-5335	G		G		
V4YM4X-5331	G		G		
V7VTUP-5335	G		G		
VAQMRQ-5331	G		G		
VLK2P3-5335	G		G		
VMGG3Y-5335	G		G		
WA6HMX-5335	G		G		
WBZYYU-5331	C	L	C	R	
X7FTFP-5335	G	L	G	R	
XBTGCH-5335	F		F		
XEZM2M-5335	G		G		
XN283U-5335	G		G		
XPXNER-5331	G		G		

TABLE 1b - (Ceramic Tile)

Questioned Imprints					
WebCode- Test	<u>Q4</u>		<u>Q5</u>		
	Conclusion	L/R	Conclusion	L/R	
XV3JXR-5331	G		G		
XVYZBN-5331	G		G		
Y648PN-5335	G		G		
Y6JD4T-5335	G		G		
YCLMAK-5335	G		G		
YF283R-5331	G		G		
YGVZRJ-5335	G		G		
YJK34Y-5331	G		G		
YTQ64Q-5331	G		G		
YULM7R-5331	G		G		
YX7EGU-5331	G		G		
Z3CHWU-5335	G		G		
ZPQ3TV-5335	G	L	G		R
ZQHEEM-5335	G		G		
ZYRPLR-5335	E		E		

Response Summary - Table 1b - (Ceramic Tile)			Participants: 143 [No Response: 0]		
	Q4 Conc.	L/R		Q5 Conc.	L/R
Identification (A)	0 (0.0%)	N/A for non-assoc.	(A)	0 (0.0%)	N/A for non-assoc.
High Degree of Ass'n. (B)	0 (0.0%)		(B)	0 (0.0%)	
Association (C)	1 (0.7%)		(C)	1 (0.7%)	
Limited Ass'n. (D)	2 (1.4%)		(D)	2 (1.4%)	
Inconclusive (E)	2 (1.4%)		(E)	1 (0.7%)	
Non-Ass'n. (F)	3 (2.1%)		(F)	4 (2.8%)	
Exclusion (G)	135 (94.4%)		(G)	135 (94.4%)	

Examination Results

Indicate the results of your comparisons of the recovered shoes with the questioned imprints.

TABLE 1c (Cardboard)

Questioned Imprints						
WebCode- Test	Conclusion	<u>Q6</u>		Conclusion	<u>Q7</u>	
			L/R			L/R
24233Q-5335	G			B		R
26XL6R-5335	G		R	A		R
2AP46P-5331	G			A		R
2D9X7W-5335	G			A		R
2HHEEK-5331	G			B		R
2PK8MU-5331	G			A		R
2VR2GQ-5331	G			B		R
2ZHBRN-5335	G		R	A		R
3DPGHG-5331	G			A		R
3URBWT-5331	G			B		R
42TMTQ-5331	G			A		R
4FP3TJ-5335	G			A		R
4Q6XMP-5335	G			A		R
4R2EZM-5335	G		R	A		R
4U6AJP-5335	G			A		R
4V2PVM-5331	G			A		R
63V64Q-5331	G			A		R

TABLE 1c (Cardboard)

Questioned Imprints						
WebCode- Test	Conclusion	<u>Q6</u>	L/R	Conclusion	<u>Q7</u>	L/R
68TLGK- 5331	G			A		R
6L6AJM- 5335	G			A		R
6W8HAL- 5331	G			A		R
7AVQME- 5335	G		R	A		R
7KRY7G- 5331	G		R	B		R
7TL6ZH- 5331	G		R	A		R
8GTVZF- 5331	G			A		R
8QDATJ- 5331	G			B		R
8Z6KCR- 5335	D		R	D		R
8ZKN3D- 5335	G		R	A		R
98XDYC- 5331	G			A		R
99TV2D- 5331	G			B		R
9LJPBL- 5331	G			B		R
9MUGHG- 5331	G			A		R
9R28J4- 5335	G			A		R
9R4UZF- 5335	G			A		R
9UURWM- 5335	G			A		R
9VPAYN- 5335	G		R	A		R
9YNNLD- 5331	G			B		R

TABLE 1c (Cardboard)

Questioned Imprints						
WebCode- Test	Conclusion	<u>Q6</u>	L/R	Conclusion	<u>Q7</u>	L/R
ADJPCJ-5335	G			B		R
ADYYGE-5331	G		R	B		R
AHBLD7-5335	G			A		R
AHQ6X4-5335	G			B		R
ANK3ND-5335	G		R	A		R
B2LXKK-5335	G			A		R
BHU3TH-5331	G			A		R
BLTEPH-5331	G			A		R
BQ9P3M-5335	G			A		R
BYC9UG-5335	G			A		R
C6H2PC-5335	G			A		R
CDDXVM-5331	G			B		R
CGC9QM-5331	G			B		R
D9CHEB-5335	G		R	A		R
DKAA7B-5335	G		R	B		R
DV8WD8-5331	D		R	D		R
E2RE89-5331	G			A		R
E6RQ39-5335	G			A		R
ELL9ZJ-5335	G		R	A		R

TABLE 1c (Cardboard)

Questioned Imprints						
WebCode- Test	Conclusion	<u>Q6</u>	L/R	Conclusion	<u>Q7</u>	L/R
ENJW9E- 5331	G			A		R
EQF3Z7- 5335	G			B		R
F97XND- 5335	G			A		R
F97ZDH- 5331	G			B		R
FFNFWF- 5331	F		R	B		R
FJRY79- 5331	G			A		R
GDFDVG- 5335	G			A		R
GWTV2F- 5335	G			A		R
H2LG9A- 5331	G			A		R
H66BAF- 5335	G			A		R
H92ZR9- 5331	G			A		R
HAWJUA- 5335	G			A		R
HPMPGA- 5335	F			C		R
HT8HTC- 5331	G			A		R
HUJ82G- 5335	G			A		R
HZ6A27- 5335	G		R	A		R
J2VV83- 5335	G			A		R
JFR8F7- 5335	G		R	A		R
JW77V6- 5331	G			A		R

TABLE 1c (Cardboard)

Questioned Imprints						
WebCode- Test	Conclusion	<u>Q6</u>	L/R	Conclusion	<u>Q7</u>	L/R
K376JZ- 5331	G			A		R
K4JGLB- 5335	G			A		R
KTKTL2- 5331	G			G		
KY4798- 5335	G			A		R
KZZMK4- 5335	G			A		R
LCMXN2- 5331	G		L	A		R
LECK3A- 5335	G			A		R
LWDABZ- 5335	G			A		R
M7F6QB- 5335	G			B		R
MRXYXW- 5331	G			A		R
NKCJQ6- 5331	G			A		R
NVD7H2- 5331	G			A		R
NVTCV7- 5331	G		R	A		R
PCF3E7- 5331	G			C		R
PKVMY6- 5331	G			A		R
PKVPNA- 5331	G		R	A		R
PRTE8Y- 5335	G			B		R
PW3RNX- 5331	G			A		R
PYAWFZ- 5331	G			A		R

TABLE 1c (Cardboard)

Questioned Imprints						
WebCode- Test	Conclusion	<u>Q6</u>	L/R	Conclusion	<u>Q7</u>	L/R
Q6BV4V- 5331	G			A		R
Q9W9DY- 5331	G			B		R
QGQD8Z- 5331	G			A		R
QRNGBU- 5335	G			A		R
QTJZDV- 5331	G			B		R
QX9J9X- 5335	G			A		R
R3XHZY- 5335	G		R	A		R
R3YFAU- 5331	G			A		R
R4UYCV- 5335	F			A		R
R8VXV2- 5331	G			A		R
REBHWR- 5335	G			A		R
RJ9XRJ- 5335	G		R	B		R
RPD3WY- 5335	G			A		R
RZVKQR- 5335	G		R	A		R
TGVU93- 5331	G			A		R
TM7VFR- 5335	G			A		R
TM7X6W- 5331	G			A		R
TQ3ML4- 5335	G			A		R
TZPPKQ- 5335	G			A		R

TABLE 1c (Cardboard)

Questioned Imprints						
WebCode- Test	Conclusion	<u>Q6</u>	L/R	Conclusion	<u>Q7</u>	L/R
UAB48T- 5331	G			A		R
UDBF4T- 5335	G			A		R
UGUGZZ- 5335	G			C		R
UHZYYW- 5335	G			A		R
V4YM4X- 5331	G			A		R
V7VTUP- 5335	G			B		R
VAQMRQ- 5331	G			B		R
VLK2P3- 5335	G			A		R
VMGG3Y- 5335	G			A		R
WA6HMX- 5335	G			A		R
WBZYYU- 5331	A		R	C		R
X7FTFP- 5335	G		R	A		R
XBTGCH- 5335	F			A		R
XEZM2M- 5335	G			B		R
XN283U- 5335	G			A		R
XPXNER- 5331	G			A		R
XV3JXR- 5331	G			A		R
XVYZBN- 5331	G			A		R
Y648PN- 5335	G			A		R

TABLE 1c (Cardboard)

Questioned Imprints						
WebCode- Test	Conclusion	<u>Q6</u>	L/R	Conclusion	<u>Q7</u>	L/R
Y6JD4T- 5335	G			B		R
YCLMAK- 5335	G			A		R
YF283R- 5331	G			A		R
YGVZRJ- 5335	G			A		R
YJK34Y- 5331	G			A		R
YTQ64Q- 5331	G			A		R
YULM7R- 5331	G			A		R
YX7EGU- 5331	G			A		R
Z3CHWU- 5335	G			A		R
ZPQ3TV- 5335	G		R	A		R
ZQHEEM- 5335	G			A		R
ZYRPLR- 5335	E			A		R

Response Summary -Table 1c (Cardboard)**Participants: 143 [No Response: 0]**

	Q6 Conc.	L/R	Q7 Conc.	L/R
Identification (A)	1 (0.7%)	N/A for non-assoc.	109 (76.2%)	L: 0 (0.0%)
High Degree of Assoc. (B)	0 (0.0%)		27 (18.9%)	R: 142 (99.3%)
Association (C)	0 (0.0%)		4 (2.8%)	
Limited Assoc. (D)	2 (1.4%)		2 (1.4%)	
Inconclusive (E)	1 (0.7%)		0 (0.0%)	
Non-Assoc. (F)	4 (2.8%)		0 (0.0%)	
Exclusion (G)	135 (94.4%)		1 (0.7%)	

Examination Results

TABLE 1d - Results Summary

Response Key

- A. Identification** - Questioned and known items share agreement of class and randomly acquired characteristics of sufficient quality and quantity. Highest degree of association.
- B. High degree of association** - Correspondence of class characteristics, in addition to unusual wear and/or one or more randomly acquired characteristics between the questioned and known item.
- C. Association of class characteristics** - Correspondence of design and physical size and possibly general wear between the questioned and known item.
- D. Limited association of class characteristics** - Some similar class characteristics between the questioned and known item with significant limiting factors.
- E. Inconclusive** - Questioned item lacks sufficient detail for a meaningful conclusion in comparison to the known item. (adapted from SWGTREAD "Lacks sufficient detail" conclusion).
- F. Indications of non-association** - Questioned item exhibits dissimilarities in comparison to the known item.
- G. Exclusion** - Questioned and known items exhibit sufficient differences of class and/or randomly acquired characteristics. Highest degree of non-association.

Consensus Summary				Participants: 143	
Q1 - Sandpaper - L (K1)		Q2 - Sandpaper - R (K1)		Q3 - Sandpaper - L (Not Provided)	
Associations	L/R	Associations	L/R	Associations	L/R
(A-D): 143 (100.0%)	L: 143 (100.0%)	(A-D): 143 (100.0%)	R: 142 (99.3%)	(A-D): 4 (2.8%)	N/A for non-assoc.
Non-Associations		Non-Associations		Non-Associations	
(F-G): 0 (0.0%)		(F-G): 0 (0.0%)	L: 1 (0.7%)	(F-G): 137 (95.8%)	
Q4 - Ceramic Tile - L (Not Provided)		Q5 - Ceramic Tile - R (Not Provided)			
Associations	L/R	Associations	L/R		
(A-D): 3 (2.1%)	N/A for non-assoc.	(A-D): 3 (2.1%)	N/A for non-assoc.		
Non-Associations		Non-Associations			
(F-G): 138 (96.5%)		(F-G): 139 (97.2%)			
Q6 - Cardboard - R (Not Provided)		Q7 - Cardboard - R (K1)			
Associations	L/R	Associations	L/R		
(A-D): 3 (2.1%)	N/A for non-assoc.	(A-D): 142 (99.3%)	R: 142 (99.3%)		
Non-Associations		Non-Associations			
(F-G): 139 (97.2%)		(F-G): 1 (0.7%)			

Conclusions

TABLE 2

WebCode- Test	Conclusions
24233Q- 5335	Questioned 1: Examined visually and with 1 to 1 transparency overlays. Comparison of the left shoe imprint labeled found on sandpaper, Q1, (item 8), to the recovered left shoe revealed an identification. Questioned 2: Examined visually and with 1 to 1 transparency overlays. Comparison of the partial right shoe imprint labeled found on sandpaper, Q2, (item 9), to the recovered right shoe revealed an identification. Questioned 3: Examined visually and with 1 to 1 transparency overlays. Comparison of the partial left shoe imprint labeled found on sandpaper, Q3, (item 10), to the recovered left shoe revealed an elimination. Questioned 4: Examined visually and with 1 to 1 transparency overlays. Comparison of the left shoe imprint labeled found on ceramic tiles, Q4, (item 11), to the recovered left shoe revealed an elimination. Questioned 5: Examined visually and with 1 to 1 transparency overlays. Comparison of the right shoe imprint labeled found on ceramic tiles, Q5, (item 12), to the recovered right shoe revealed an elimination. Questioned 6: Examined visually and with 1 to 1 transparency overlays. Comparison of the right shoe imprint labeled found on cardboard, Q6, (item 13), to the recovered right shoe revealed an elimination. Questioned 7: Examined visually and with 1 to 1 transparency overlays. Comparison of the right shoe imprint labeled found on cardboard, Q7, (item 14), to the recovered right shoe revealed a high degree of association.
26XL6R- 5335	[No Conclusions Reported.]
2AP46P- 5331	01-01: Photograph of questioned impressions on a tan piece of sandpaper (Q1 – Q3) This photograph depicts a total of three questioned footwear impressions in black material. One of the questioned impressions (Q1) is a nearly complete left footwear impression and is similar in size, shape, tread design, and at least one randomly acquired characteristic with the suspect's left shoe (01-04). It is my opinion that this questioned impression was made by the suspect's left shoe [Category 1]. A second questioned impression (Q2) is a partial right footwear impression and is similar in size, shape, tread design, and at least one randomly acquired characteristic with the suspect's right shoe (01-04). It is my opinion that this questioned impression was made by the suspect's right shoe [Category 1]. The remaining questioned impression (Q3) is a partial left footwear impression and exhibits similarities in tread design but is different in size to the suspect's left shoe (01-04). It is my opinion that this questioned impression was not made by the suspect's shoes [Category 5]. No further analysis done. 01-02: Photograph of questioned impressions on silver and white ceramic tiles (Q4 and Q5) This photograph depicts a total of two questioned footwear impressions in black material. The questioned impressions (Q4 and Q5) are a nearly complete left footwear impression (Q4) and a nearly complete right footwear impression (Q5) and exhibit similarities in tread design but is different in size to the suspect's left and/or right shoe (01-04). It is my opinion that these questioned impressions were not made by the suspect's shoes [Category 5]. No further analysis done. 01-03: Photograph of questioned impressions on a brown piece of cardboard (Q6 and Q7) This photograph depicts a total of two questioned footwear impressions in black material. One of the questioned impressions (Q6) is a nearly complete right footwear impression and exhibits similarities in tread design but is different in size to the suspect's right shoe (01-04). It is my opinion that this questioned impression was not made by the suspect's shoes [Category 5]. The remaining questioned impression (Q7) is a nearly complete right footwear impression and is similar in size, shape, tread design, and at least one randomly acquired characteristic with the suspect's right shoe (01-04). It is my opinion that this questioned impression was made by the suspect's right shoe [Category 1]. No further analysis done. 01-04: Photographs of the suspect's left and right shoes and test impressions (Items K1a – K1g) This item was used for comparison purposes.
2D9X7W- 5335	In my opinion, due to differences observed in the size, wear and randomly acquired characteristics, the known shoe (FEN*) was not the source of, did not make the mark (FEN*). (2 - Exclusion). In my opinion, the known shoe (FEN*) was the source of, and made, the questioned mark (FEN*). The chance of another shoe being the source of the mark is considered negligible. (7 - Identification)
2HHEEK- 5331	Similarities in class characteristics (design, spacing and wear) were observed between Q1 and the known left shoe. There are corresponding randomly acquired characteristics (RACs) observed. In the opinion of the analyst, the RACs are of high quality and discriminability. Therefore, there is strong support that

TABLE 2

WebCode-Test	Conclusions
	questioned impression Q1 was made by the known left shoe. Similarities in class characteristics (design, spacing and wear) were observed between Q2 and the known right shoe. There are corresponding (RACs) observed. In the opinion of the analyst, the RACs are of high quality and discriminability. Therefore, there is strong support that questioned impression Q2 was made by the known right shoe. A RAC is a feature resulting from interaction with an object including but not limited to: cuts, scratches, tears, holes, stone holds, abrasions and the acquisition of debris. The position, orientation, size and shape of these characteristics differentiate the item from other items with similar class characteristics. Similarities in class characteristics (design, spacing and wear) were observed between Q7 and the known right shoe. There is a corresponding randomly acquired characteristic (RAC) observed. The addition of a corresponding RAC makes the association stronger than if the comparison were just based on class characteristics. However, the RAC is not of the quality or discriminability to reach the higher level of association. Q7 could have been made by the known right shoe or another item exhibiting the same design, spacing, wear and corresponding RAC. When a questioned footwear impression is from a left or right footwear source, then the impression could not have been made by the opposite shoe side. Q3-Q6 had similar designs as the known shoes but the spacing differed. Therefore, Q3-Q6 could not have been made by the known shoes.
2PK8MU-5331	The right shoe from Item K1 is identified as having made the questioned impressions Q2 and Q7 based on a correspondence of observed class characteristics (specific tread design and size), general wear, and randomly acquired characteristics of sufficient quality and quantity. The right shoe from Item K1 was the source of these impressions. Another item being the source is considered a practical impossibility. The left shoe from Item K1 is identified as having made the questioned impression Q1 based on a correspondence of observed class characteristics (specific tread design and size), general wear, and randomly acquired characteristics of sufficient quality and quantity. The left shoe from Item K1 was the source of these impressions. Another item being the source is considered a practical impossibility. The shoes from Item K1 are excluded as having made the questioned impressions Q3, Q4, Q5, and Q6 based on observed differences in class characteristics (size and tread design element spacing). The shoes from Item K1 are not the source of these impressions.
2VR2GQ-5331	Observed Impressions: a. Laboratory item #s 4-6: Seven (7) footwear impressions in black ink i. Three (3) impressions on sandpaper: a. Q1: One (1) almost complete impression; appears to be made by a left shoe b. Q2: One (1) partial impression; overlapping with Q3 c. Q3: One (1) partial impression; overlapping with Q2 ii. Two (2) footwear impressions on ceramic tiles a. Q4: One (1) partial impression; appears to be made by a left shoe b. Q5: One (1) almost complete impression; appears to be made by a right shoe iii. Two (2) footwear impressions on cardboard a. Q6: One (1) almost complete impression; overlapping with Q7; appears to be made by a right shoe b. Q7: One (1) almost complete impression; overlapping with Q6; appears to be made by a right shoe Comparison: a. Footwear impressions (Q1-Q7) were compared to the known right/left shoes (K1R/K1L), as well as test impressions generated by K1R/K1L with the following results: i. The following are consistent and exhibit no exclusionary differences with respect to class characteristics (size, shape, tread design, and wear pattern): a. Q1 and K1L. In addition, Q1 and K1L exhibit three (3) corresponding randomly acquired characteristics. b. Q2 and K1R. In addition, Q2 and K1R exhibit four (4) corresponding randomly acquired characteristics. c. Q7 and K1R. In addition, Q7 and K1R exhibit one (1) corresponding randomly acquired characteristics. ii. The following are different with respect to their class characteristics (size, shape, wear pattern): a. Q1 and K1R b. Q2 and K1L c. Q3 and K1R/K1L d. Q4 and K1R/K1L e. Q5 and K1R/K1L f. Q6 and K1R/K1L g. Q7 and K1L Interpretation of results: 1. The following is the opinion of the undersigned: a. The questioned footwear impression was made by the known shoe (K1), as follows: i. Q1 and the left shoe ii. Q2 and the right shoe b. The questioned footwear impression could have been made by the known shoe (K1) or any other item exhibiting the same analyzed characteristics, as follows: i. Q7 and the right shoe c. The questioned footwear impression could not have been made by the known shoe (K1), as follows: i. Q1 and the right shoe ii. Q2 and the left shoe iii. Q3 and the right/left shoes iv. Q4 and the right/left shoes v. Q5 and the right/left shoes vi. Q6 and the right/left shoes vii. Q7 and the left shoe
2ZHBRN-5335	The results strongly suggest that the shoe print Q1, Q2, and Q7 was made with the shoe (Level 4). The shoeprints Q3-Q6 have not been deposited by the shoe.

TABLE 2

WebCode-Test	Conclusions
3DPGHG-5331	After Careful and precise testing, WE FOUND THAT:- 1- Q1,Q2,Q7 EDIDENCES ARE IDENTICAL TO SUSPETED SHOES. 2- Q1 IS LEFT AND Q7&Q2 ARE RIGHT. 3- Q3,Q4,Q5 AND Q6 ARE EXCLUSIVE TO THE SUSPECTED SHOES.
3URBWT-5331	In the opinion of this examiner, Laboratory Item #001.A (K1a) the left shoe sole from the recovered New Balance shoes depicted in the photograph was the source of, and made, Laboratory Item #001.H (Q1) questioned, left imprint found on sandpaper. In the opinion of this examiner, Laboratory Item #001.A (K1a) the right shoe sole from the recovered New Balance shoes depicted in the photograph was the source of, and made, Laboratory Item #001.I (Q2) questioned, right imprint found on sandpaper. In the opinion of this examiner, Laboratory Item #001.A (K1a) the left shoe sole from the recovered New Balance shoes depicted in the photograph was not the source of, and did not make, Laboratory Item #001.J (Q3) questioned, left imprint found on sandpaper. In the opinion of this examiner, Laboratory Item #001.A (K1a) the left shoe sole from the recovered New Balance shoes depicted in the photograph was not the source of, and did not make, Laboratory Item #001.K (Q4) questioned, left imprint found on ceramic tiles. In the opinion of this examiner, Laboratory Item #001.A (K1a) the right shoe sole from the recovered New Balance shoes depicted in the photograph was not the source of, and did not make, Laboratory Item #001.L (Q5) questioned, right imprint found on ceramic tiles. In the opinion of this examiner, Laboratory Item #001.A (K1a) the right shoe sole from the recovered New Balance shoes depicted in the photograph was not the source of, and did not make, Laboratory Item #001.M (Q6) questioned, right imprint found on cardboard. In the opinion of this examiner, the characteristics observed exhibit strong associations between Laboratory Item #001.N (Q7) questioned, right imprint found on cardboard and Laboratory Item #001.A (K1a) the right shoe sole from the recovered New Balance shoes depicted in the photograph; however, the quality and/or quantity were insufficient for an identification. Other footwear with the same class characteristics observed in the impression are included in the population of possible sources only if they display the same wear and/or randomly acquired characteristics observed in Laboratory Item #001.N.
42TMTQ-5331	The methodology utilized during this examination includes: visual examination, digital retention, and ACE-V. Seven (7) questioned footwear impressions were noted on Items 1 through 7 (designated as F1, F2, F3, F4, F5, F6, and F7). The questioned footwear impressions noted as F2 and F7 correspond in outsole design, physical size, and general wear with the known right shoe submitted in Item 8 (8-1). Additionally, the questioned footwear impressions exhibit unique identifying characteristics that are also present in the known right shoe; therefore, it was determined that the questioned footwear impressions were made by the known right shoe submitted in Item 8 (8-1). The questioned footwear impressions are of a right shoe; therefore, they could not have been made by the known left shoe submitted in Item 8 (8-1). The questioned footwear impression noted as F1 corresponds in outsole design, physical size, and general wear with the known left shoe submitted in Item 8 (8-1). Additionally, the questioned footwear impression exhibits unique identifying characteristics that are also present in the known left shoe; therefore, it was determined that the questioned footwear impression was made by the known left shoe submitted in Item 8 (8-1). The questioned footwear impression is of a left shoe; therefore, they could not have been made by the known right shoe submitted in Item 8 (8-1). The questioned footwear impressions noted in F3, F4, F5, and F6 were compared to the known shoes submitted in Item 8 (8-1). The questioned footwear impressions do not correspond in physical size with the known shoes; therefore, the questioned impressions were not made by the known shoes submitted in Item 8 (8-1).
4FP3TJ-5335	It is the opinion of this examiner that the known Right footwear, is the source of, and made the questioned impressions Q2 and Q7 and the known Left footwear, is the source of, and made the questioned impression Q1. Another item of footwear being the source of these impressions is considered a practical impossibility. It is the opinion of this examiner that the known Right/Left footwear, are not the source of, and did not make the questioned impressions Q3, Q4, Q5, or Q6.
4Q6XMP-5335	A comparison of the sole marks found at the crime scene and the shoes recovered revealed similarities in size, pattern and randomly acquired characteristics of sufficient quality and quantity, leading to the following identifications : - The sole mark Q1 with the left shoe - The sole marks Q2 and Q7 with the right shoe The comparisons also revealed major discrepancies in terms of dimensions and randomly acquired characteristics, leading to the exclusion of sole marks Q3, Q4, Q5 and Q6.

TABLE 2

WebCode- Test	Conclusions
4R2EZM- 5335	1.The questioned shoeprint Q1 is identified as originating from the left shoe of known footwear K1. 2.The questioned shoeprint Q2 and Q7 are identified as originating from the right shoe of known footwear K1. 3.The questioned shoeprints Q3 through Q6 are excluded as originating from the known footwear K1.
4U6AJP- 5335	The questioned impression marked "Q1" was examined and found to have been made by the left shoe marked "K". The questioned impression marked "Q2" was examined and found to have been made by the right shoe marked "K". The questioned footwear impressions marked "Q3" to "Q6" were examined and found not to have been made by the pair of shoes marked "K". The questioned impression marked "Q7" was examined and found to have been made by the right shoe marked "K".
4V2PVM- 5331	The photographs of the suspect's shoes and questioned impressions were visually examined and processed by superimposed comparison. We copied the photographs of known imprints of the suspect's shoes K1f and K1g on transparent films and superimposed them over the photographs of questioned impressions Q1 to Q7, and the results are as below: Questioned impression labelled Q1 was found to be consistent in shape, physical size and individual characteristics with the suspect's left shoe; Questioned impressions labelled Q2 and Q7 were found to be consistent in shape, physical size and individual characteristics with the suspect's right shoe. Questioned impressions labelled Q3, Q4, Q5, and Q6 were found to have similar shape to the suspect's shoes; however, they were dissimilar in physical size and individual characteristics from the suspect's shoes. Therefore, questioned impressions labelled Q3, Q4, Q5, and Q6 can be eliminated.
63V64Q- 5331	Exhibit 4.1 (Q1) was identified as having been made by the known left shoe (K1). Exhibits 4.2 (Q2) and 6.2 (Q7) were identified as having been made by the known right shoe (K1). Exhibits 5.2 (Q5) and 6.1 (Q6) were identified as having been made by the same right shoe. These impressions were not made by the known right shoe (K1), based on class characteristics, difference in size. Suspect footwear includes New Balance right shoes of similar outsole design; however, any suspect footwear should be submitted for examination. Exhibits 4.3 (Q3) and 5.1 (Q4) could have been made by the same left shoe based on class and some individual characteristics; however, lack of detail precludes a more conclusive result. These impressions were not made by the known left shoe (K1), based on class characteristics, difference in size. Suspect footwear includes New Balance left shoes of similar outsole design; however, any suspect footwear should be submitted for examination.
68TLGK- 5331	The methodologies utilized in this examination include visual examination and ACE-V. Item 1: One (1) questioned footwear impressions (Q1), designated as F1. F1 was compared to Item 8 (Item 9-Overlays) with the following results: F1 corresponds in outsole design, physical size, and general wear with the known left shoe submitted in Item 8. Additionally, F1 exhibits unique identifying characteristics that are also present in the known left shoe; therefore, it was determined that F1 was made by the known left shoe submitted in Item 8. F1 is of a left shoe; therefore, it was not made by the right shoe submitted in Item 8. Item 2: One (1) questioned footwear impressions (Q2), designated as F2. F2 was compared to Item 8 (Item 9-Overlays) with the following results: F2 corresponds in outsole design, physical size, and general wear with the known right shoe submitted in Item 8. Additionally, F2 exhibits unique identifying characteristics that are also present in the known right shoe; therefore, it was determined that F2 was made by the known right shoe submitted in Item 8. F2 is of a right shoe; therefore, it was not made by the left shoe submitted in Item 8. Item 3: One (1) questioned footwear impressions (Q3), designated as F3. F3 was compared to Item 8 (Item 9-Overlays) with the following results: F3 differs in physical size from the right and left shoe; therefore, it was not made by the right and left shoe submitted in Item 8. Item 4: One (1) questioned footwear impressions (Q4), designated as F4. F4 was compared to Item 8 (Item 9-Overlays) with the following results: F4 differs in physical size from the left shoe; therefore, it was not made by the left shoe submitted in Item 8. F4 is of a left shoe; therefore, it was not made by the right shoe submitted in Item 8. Item 5: One (1) questioned footwear impressions (Q5), designated as F5. F5 was compared to Item 8 (Item 9-Overlays) with the following results: F5 differs in physical size from the right shoe; therefore, it was not made by the right shoe submitted in Item 8. F5 is of a right shoe; therefore, it was not made by the left shoe submitted in Item 8. Item 6: One (1) questioned footwear impressions (Q6), designated as F6. F6 was compared to Item 8 (Item 9-Overlays) with the following

TABLE 2

WebCode-Test	Conclusions
	results: F6 differs in physical size from the right shoe; therefore, it was not made by the right shoe submitted in Item 8. F6 is of a right shoe; therefore, it was not made by the left shoe submitted in Item 8. Item 7: One (1) questioned footwear impressions (Q7), designated as F7. F7 was compared to Item 8 (Item 9-Overlays) with the following results: F7 corresponds in outsole design, physical size, and general wear with the known right shoe submitted in Item 8. Additionally, F7 exhibits unique identifying characteristics that are also present in the known right shoe; therefore, it was determined that F7 was made by the known right shoe submitted in Item 8. F7 is of a right shoe; therefore, it was not made by the left shoe submitted in Item 8.
6L6AJM-5335	Q1 was made by the Left Shoe. Q2 was made by the Right Shoe. Q3 was not made by the right or left shoe. Q4 was not made by the right or left shoe. Q5 was not made by the right or left shoe. Q6 was not made by the right or left shoe. Q7 was made by the Right Shoe.
6W8HAL-5331	Photographs of Questioned Impressions - One photograph depicts three questioned impressions on sandpaper. One questioned impression (Q1) was determined to be a mostly complete left shoe impression that is similar in size, shape, tread design, and shares at least 2 randomly acquired characteristics with the known left shoe. It is my opinion that the questioned impression was made by the known left shoe. One questioned impression (Q2) was determined to be a partial right shoe impression that is similar in size, shape, tread design, and shares at least 1 randomly acquired characteristic with a portion of the known right shoe. It is my opinion that the questioned impression was made by the known right shoe. One questioned impression (Q3) was determined to be a partial shoe impression that is visually similar in tread design and shape but dissimilar in size and at least 1 randomly acquired characteristic to the known left shoe. It is my opinion that the questioned impression was not made by the known left shoe. One photograph depicts two questioned impressions on ceramic tile. One questioned impression (Q4) was determined to be a mostly complete left shoe impression that is visually similar in tread design and shape but dissimilar in size and at least 2 randomly acquired characteristics to the known left shoe. It is my opinion that the questioned impression was not made by the known left shoe. One questioned impression (Q5) was determined to be a mostly complete right shoe impression that is visually similar in tread design and shape but dissimilar in size and at least 1 randomly acquired characteristic to the known right shoe. It is my opinion that the questioned impression was not made by the known right shoe. One photograph depicts two questioned impressions on cardboard. One questioned impression (Q6) was determined to be a mostly complete right shoe impression that is visually similar in tread design and shape but dissimilar in size and at least 2 randomly acquired characteristics to the known right shoe. It is my opinion that the questioned impression was not made by the known right shoe. One questioned impression (Q7) was determined to be a mostly complete right shoe impression that is similar in size, shape, tread design, and shares at least 2 randomly acquired characteristics with the known right shoe. It is my opinion that the questioned impression was made by the known right shoe. Photographs of Known Shoes and Test Impressions - This item was used for comparison purposes.
7AVQME-5335	The results of the examination extremely strongly support that the imprint Q1 was made with the left shoe K1. The results of the examination extremely strongly support that the imprint Q2 was made with the right shoe K1. The results of the examination strongly support that the imprint Q3 was not made with the shoes K1. The results of the examination extremely strongly support that the imprint Q4 was not made with the shoes K1. The results of the examination extremely strongly support that the imprint Q5 was not made with the shoes K1. The results of the examination extremely strongly support that the imprint Q6 was not made with the shoes K1. The results of the examination extremely strongly support that the imprint Q7 was made with the right shoe K1.
7KRY7G-5331	The questioned footwear impression Q1 was probably produced by the sole of the left shoe K1F. The questioned footwear impressions Q2 and Q7 were probably produced by the sole of the right shoe K1F. The questioned footwear impressions Q3 and Q4 were not produced by the sole of the left shoe K1F. The questioned footwear impressions Q5 and Q6 were not produced by the sole of the right shoe K1F.
7TL6ZH-5331	[No Conclusions Reported.]

TABLE 2

WebCode-Test	Conclusions
8GTVZF-5331	Item 1.1.1 Q1 partial footwear impression was made by the Item 1.2.1 Left shoe. This identification is based on the agreement of class characteristics and randomly acquired characteristics (RACs) of sufficient quality and quantity. Item 1.1.2 Q2 partial footwear impression and Item 1.1.7 Q7 footwear impression were made by the Item 1.2.2 Right shoe. These identifications are based on the agreement of class characteristics and randomly acquired characteristics (RACs) of sufficient quality and quantity. Item 1.1.3 Q3 and Item 1.1.4 Q4 partial footwear impression were made by the same unknown shoe. This identification is based on the agreement of class characteristics and randomly acquired characteristics (RACs) of sufficient quality and quantity. Items 1.1.3 Q3 and 1.1.4 Q4 (left outsole questioned impressions) were not made by the Item 1.2.1 Left shoe. These eliminations are based on differences in class characteristics and randomly acquired characteristics (RACs). Items 1.1.3 Q3 and 1.1.4 Q4 (left outsole questioned impressions) were not made by the Item 1.2.2 Right shoe. These eliminations are based on differences in class characteristics. Item 1.1.5 Q5 and Item 1.1.6 Q6 footwear impressions were made by the same unknown shoe. This identification is based on the agreement of class characteristics and randomly acquired characteristics (RACs) of sufficient quality and quantity. Items 1.1.5 Q5 and 1.1.6 Q6 (right outsole questioned impressions) were not made by the Item 1.2.2 Right shoe. These eliminations are based on differences in class characteristics and randomly acquired characteristics (RACs). Items 1.1.5 Q5 and 1.1.6 Q6 (right outsole questioned impressions) were not made by the Item 1.2.1 Left shoe. These eliminations are based on differences in class characteristics. Items 1.1.5 Q5 and 1.1.6 Q6 (right outsole questioned impressions) were not made by the same unknown shoe that made Items 1.1.3 Q3 and 1.1.4 Q4 (left outsole questioned impressions). These eliminations are based on differences in class characteristics.
8QDATJ-5331	Questioned impressions Q1 through Q7 were compared to the known right and left sneakers (K1L, K1R) as well as test impressions generated by K1L and K1R with the following results: i. Q1 and K1L are consistent and exhibit no exclusionary differences with respect to class characteristics: size, shape, tread design, and wear pattern. In addition, Q1 and K1L exhibit 3 corresponding individual characteristics. ii. Q2 and K1R are consistent and exhibit no exclusionary differences with respect to class characteristics: size, shape, tread design, and wear pattern. In addition, Q2 and K1R exhibit 2 corresponding individual characteristics. iii. Q3 through Q6 and K1L, K1R are different with respect to their class characteristics: size, shape, tread design, and wear pattern. iv. Q7 and K1R are consistent and exhibit no exclusionary differences with respect to class characteristics: size, shape, tread design, and wear pattern. In addition, Q7 and K1R exhibit 3 corresponding individual characteristics. 1. It is the opinion of the undersigned that questioned footwear impression Q1 was made by the known sneaker K1L. 2. It is the opinion of the undersigned that questioned footwear impression Q2 was made by the known sneaker K1R. 3. It is the opinion of the undersigned that the questioned footwear impression Q7 could have been made by the known sneaker K1R, or any other item exhibiting the same analyzed characteristics. 4. It is the opinion of the undersigned that questioned footwear impressions Q3 through Q6 could not have been made by the known sneakers K1L and K1R.
8Z6KCR-5335	Q1 and Q2. In the opinion of the examiner, the particular known footwear was the source of, and made, the questioned impression and the chance of another tyre or item of footwear being the source of the impression is considered negligible. Q3. In the opinion of the examiner, the known footwear is a possible source of the questioned impression and therefore could have produced the impression. Other footwear or tyres with the same class characteristics are included as possible sources. Q4,Q5,Q6 & Q7. In the opinion of the examiner, factors like insufficient detail in the scene impression have limited the conclusion to a general association of some class characteristics. Other shoes with the same class characteristics are included in the population of possible sources of the impression.
8ZKN3D-5335	The results of the examination extremely strongly support that the imprint Q1 was made with the left shoe K1. The results of the examination extremely strongly support that the imprint Q2 was made with the right shoe K1. The results of the examination extremely strongly support that the imprint Q3 was not made with the left shoe K1. The results of the examination extremely strongly support that the imprint Q4 was not made with the left shoe K1. The results of the examination extremely strongly support that the imprint Q5 was not made with the right shoe K1. The results of the examination extremely strongly support that the imprint Q6 was not made with the right shoe K1. The results of the examination extremely strongly support that the imprint Q7 was made with the right shoe K1.

TABLE 2

WebCode- Test	Conclusions
98XDYC- 5331	EXAMINATIONS: Determine whether any footwear marks present in Exhibits Q1 - Q7 can be associated with the known pair of outsoles in Exhibits K1a through K1g. FINDINGS AND OPINIONS: Exhibit K1a through K1g consists of images and imprints of the soles of the known pair of shoes. Exhibits Q1 through Q7 consists of three imprint of questioned marks. Exhibit Q1 through Q3 consists of three questioned partial footwear marks on brown sandpaper. Exhibit Q4 through Q5 consists of two questioned partial footwear marks on white ceramic tiles. Exhibit Q6 through Q7 consists of two questioned partial footwear marks on brown cardboard. The questioned footwear mark Q1 was made by the known left shoe. This opinion is the highest degree of association expressed by a footwear examiner. The questioned mark and the known footwear must share sufficient agreement of observable class and individual characteristics. In the opinion of the examiner the known footwear was the source of and made the questioned mark. The questioned footwear marks, Q2 and Q7 were made by the known right shoe. This opinion is the highest degree of association expressed by a footwear examiner. The questioned mark and the known footwear must share sufficient agreement of observable class and individual characteristics. In the opinion of the examiner the known footwear was the source of and made the questioned mark. Questioned footwear marks Q3, Q4, Q5, and Q6 were not made by the known pair of shoes.
99TV2D- 5331	Similarities in class characteristics (design/spacing/sizing) were observed between Q1 and the known left shoe, as well as between Q2 and the known right shoe. There are corresponding randomly acquired characteristics (RACs) observed. In the opinion of the analyst, the RACs are of high quality and discriminability. Therefore, there is strong support that Q1 was made by the known left shoe and that Q2 was made by the known right shoe, based on the correspondence of class characteristics and high quality and discriminability of RACs. Similarities in class characteristics (design/spacing/sizing) were observed between Q7 and the known right shoe. There are also corresponding RACs observed. The addition of the corresponding RACs makes the association stronger than if the comparison were just based on class characteristics. However, the RACs were not of the quality and/or discriminability to reach the higher level of association. Therefore, Q7 could have been made by the known right shoe or another item exhibiting the same design, size, spacing, and corresponding RACs. Differences in class characteristics (spacing/sizing) were observed between Q3 and Q4 and the known left shoe. Differences in class characteristics (spacing/sizing) were also observed between Q5 and Q6 and the known right shoe. Therefore, Q3 and Q4 could not have been made by the known left shoe and Q5 and Q6 could not have been made by the known right shoe. In addition, since Q3 and Q4 were from a left footwear source, they could not have been made by the known right shoe, and since Q5 and Q6 were from a right footwear source, they could not have been made by the known left shoe.
9LJPBL- 5331	The Item K1 left shoe is identified as the source of the Q1 left imprint based on similarities in the class characteristics of outsole design, size, and wear, along with the correspondence of randomly acquired characteristics of sufficient quality and quantity. The Item K1 right shoe is identified as the source of the Q2 right imprint based on similarities in the class characteristics of outsole design, size, and wear, along with the correspondence of randomly acquired characteristics of sufficient quality and quantity. The Item K1 right shoe shares a high degree of association with the Q7 right imprint based on similarities in the class characteristics of outsole design, size, and wear, along with the correspondence of randomly acquired characteristics. The Item K1 left and right shoes are excluded as a source of the Q3 and Q4 left imprints and the Q5 and Q6 right imprints based on differences in the class characteristic of size.
9MUGHG- 5331	Questioned imprints of Q1-Q7 were compared with known imprint made with the the recovered shoes. Questioned imprints of Q1 were found to be consistent in shape, physical size, and individual characteristics with the imprint of the recovered left shoe. Questioned imprints of Q2, Q7 were found to be consistent in shape, physical size, and individual characteristics with the imprint of the recovered right shoe. Questioned imprints of Q3, Q4, Q5, Q6 were eliminated as having been made by the recovered shoe.
9R28J4- 5335	The recovered left shoe is identified as the source of the questioned imprint Q1. The recovered right shoe is identified as the source of the questioned imprint Q7. The questioned imprint Q2 could have been made by the recovered right shoe and shows a high degree of association with it. The recovered shoes can be excluded as the source of the questioned imprints Q3, Q4, Q5 and Q6.

TABLE 2

WebCode- Test	Conclusions
9R4UZF- 5335	1) In my opinion, the findings demonstrate conclusively that the left shoe has made the recorded footwear mark Q1. 2) In my opinion, the findings demonstrate conclusively that the right shoe has made the recorded footwear marks Q2 and Q7. 3) In my opinion, the findings demonstrate conclusively that the left and right shoes have not made the recorded footwear marks Q3, Q4, Q5 or Q6.
9UURWM- 5335	Known shoe K1 (left shoe) has been identified as the source of shoe impression Q1. Known shoe K1 (right shoe) has been identified as the source of shoe impressions Q2 and Q7. Known shoe K1 (left shoe) has been excluded as the source of shoe impressions Q3 and Q4. Known shoe K1 (right shoe) has been excluded as the source of shoe impressions Q5 and Q6.
9VPAYN- 5335	The test impressions and photographs of the known shoes were compared to the photographs of the questioned impressions using the side by side and overlay comparison methods. The impression marked Q1 correspond in class characteristics, namely design (arrangement of footwear design elements and pattern/s), wear (extent of erosion to the outsole) and physical size (length, width and relative positions of various design elements in the outsole) and in individual characteristics (random characteristics i.e. damage, similar in size, shape, orientation and location resulting from random events), therefore it can be stated that the known left shoe was the source of the impression. The impressions marked Q2 and Q7 correspond in class characteristics, namely design (arrangement of footwear design elements and pattern/s), wear (extent of erosion to the outsole) and physical size (length, width and relative positions of various design elements in the outsole) and in individual characteristics (random characteristics i.e. damage (Q2) feathering (Q7), similar in size, shape, orientation and location resulting from random events), therefore it can be stated that the known right shoe was the source of the impressions. The impressions marked Q3, Q4, Q5 and Q6 correspond in general design, however, significant differences are noted in design arrangement (stippling shape/size and position) and size (distances between features), therefore it can be stated that the known shoes were not the source of the impressions.
9YNNLD- 5331	The submitted photos of known footwear were examined and compared to the impression visible in Q1. Q1 corresponds to the known left shoe in tread design, tread size, tread wear and randomly acquired characteristics including a scratch, gouge, and void in the tread surface. In the opinion of the analyst, the randomly acquired characteristics are of high quality and discriminability. There is strong support that Q1 was made by the known left shoe based on the correspondence of compared characteristics. The submitted photos of known footwear were examined and compared to the impression visible in Q2. Q2 corresponds to the known right shoe in tread design, tread size, tread wear and randomly acquired characteristics including a scratch, gouge, and voids in the tread surface. In the opinion of the analyst, the randomly acquired characteristics are of high quality and discriminability. There is strong support that Q2 was made by the known right shoe based on the correspondence of compared characteristics. The submitted photos of known footwear were examined and compared to the impression visible in Q3. Q3 and the known left shoe correspond in tread design; however, are different in tread size and tread wear. Thus, Q3 could not have been made by the known footwear based on the submitted photos. The submitted photos of known footwear were examined and compared to the impression visible in Q4. Q4 and the known left shoe correspond in tread design; however, are different in tread size, tread wear and randomly acquired characteristics. Thus, Q4 could not have been made by the known footwear based on the submitted photos. The submitted photos of known footwear were examined and compared to the impression visible in Q5. Q5 and the known right shoe correspond in tread design; however, are different in tread size, tread wear and randomly acquired characteristics. Thus, Q5 could not have been made by the known footwear based on the submitted photos. The submitted photos of known footwear were examined and compared to the impression visible in Q6. Q6 and the known right shoe correspond in tread design; however, are different in tread size and tread wear. Thus, Q6 could not have been made by the known footwear based on the submitted photos. The submitted photos of known footwear were examined and compared to the impression visible in Q7. Q7 corresponds to the known right shoe in tread design, tread size, tread wear and randomly acquired characteristics including scratches, and a gouge in the tread surface. In the opinion of the analyst, the randomly acquired characteristics are of high quality and discriminability. There is strong support that Q7 was made by the known right shoe based on the correspondence of compared characteristics.

TABLE 2

WebCode-Test	Conclusions
ADJPCJ-5335	This report refers to exhibits by Lab Number. The following results only apply to the items tested. Each of Exhibits 1 through 7 were visually examined. All seven exhibits were deemed suitable for comparison. Exhibit 1 was compared with the images of the known shoes and test impressions in Exhibit 8. Exhibit 1 corresponds in overall design, shape, size, wear, and Randomly Acquired Characteristics (RACs). Based upon the comparison, the left shoe depicted in Exhibit 8 was identified as being the source of Exhibit 1. The right shoe depicted in Exhibit 8 corresponded in design with Exhibit 1 but was excluded as a possible source of Exhibit 1 due to differences in the outsole shape. Exhibit 2 was compared with the images of the known shoes and test impressions in Exhibit 8. Exhibit 2 corresponded in overall design, shape, size, wear and randomly acquired characteristics with the right shoe in Exhibit 8. Based upon the comparison, the right shoe depicted in Exhibit 8 was identified as the source of Exhibit 2. The left shoe depicted in Exhibit 8 corresponded in design with Exhibit 2 but was excluded as a possible source of Exhibit 2 due to differences in the outsole shape. Exhibits 3 and 4 were compared with the images of the known shoes and test impressions in Exhibit 8. Exhibits 3 and 4 corresponded in overall design and shape with the known left shoe depicted in Exhibit 8 but did not correspond in size or mold characteristics with the left shoe depicted in Exhibit 8. Based upon the comparison, the left shoe depicted in Exhibit 8 was excluded as the source of Exhibits 3 and 4. The right shoe depicted in Exhibit 8 corresponded in design with Exhibits 3 and 4 but was excluded as a possible source of Exhibits 3 and 4 due to differences in the outsole shape. Exhibits 5 and 6 were compared with the images of the known shoes and test impressions in Exhibit 8. Exhibits 5 and 6 corresponded in overall design and shape with the known right shoe depicted in Exhibit 8 but did not correspond in size, mold characteristics, or RACs with the right shoe depicted in Exhibit 8. Based upon the comparison, the right shoe depicted in Exhibit 8 was excluded as the source of Exhibits 5 and 6. The left shoe depicted in Exhibit 8 corresponded in design with Exhibits 5 and 6 but was excluded as a possible source of Exhibits 5 and 6 due to differences in the outsole shape. Exhibit 7 was compared with the images of the known shoes and test impressions in Exhibit 8. Exhibit 7 corresponds in overall design, shape, size, Schallamach pattern, and RACs. Based upon the comparison, the left shoe depicted in Exhibit 8 was determined to have a high degree of association with the impression in Exhibit 7. The right shoe depicted in Exhibit 8 corresponded in design with Exhibit 7 but was excluded as a possible source of Exhibit 7 due to differences in the outsole shape.
ADYYGE-5331	In my opinion, the findings provide conclusive evidence that certain of the footwear marks on the sandpaper and cardboard recovered from the SCENE were made by the left and right 'New Balance' training shoes attributed to SUSPECT (item K1).
AHBLD7-5335	A. Based on the highest degree of association in wear size ,pattern ,and randomly acquired characteristics,the Q1 questioned footprints are all the same from the recovered left shoe. B. Due to the highest degree of association in wear size ,pattern ,and randomly acquired characteristics,the Q2,Q7 questioned footprints are all the same from the recovered right shoe. C. there is the highest degree of non-association in wear size and randomly acquired characteristics between the questioned Q3,Q4,Q5,Q6 footprints and the recovered right or left shoe.
AHQ6X4-5335	[Laboratory] uses the same terms for identification and exclusion as provided by CTS.
ANK3ND-5335	Based upon my experience of undertaking and interpreting the results of footwear comparisons, and the level of correspondence noted in pattern, pattern size, degree of wear & specific wear/damage features, in my opinion, the findings show conclusively that the footwear marks Q1, Q2 and Q7 were made by the training shoes K1 (left and right).
B2LXKK-5335	[No Conclusions Reported.]
BHU3TH-5331	The methodology utilized includes visual examination, digital retention, and ACE-V. One (1) questioned footwear impression was noted on Item 1, designated as F1. One (1) questioned footwear impression was noted on Item 2, designated as F2. One (1) questioned footwear impression was noted on Item 3, designated as F3. One (1) questioned footwear impression was noted on Item 4, designated as F4. One (1) questioned footwear impression was noted on Item 5, designated as F5. One (1) questioned footwear impression was noted on Item 6, designated as F6. One (1) questioned footwear impression was noted

TABLE 2

WebCode- Test	Conclusions
BLTEPH- 5331	on Item 7, designated as F7. F1 through F7 were compared to the known shoes submitted as Item 8 (Item 8-1). The questioned footwear impression F1 corresponds in outsole design and physical size with the known left shoe submitted as Item 8 (Item 8-1). Additionally, the questioned footwear impression exhibits unique identifying characteristics that are also present in the known left shoe; therefore, it was determined that the questioned footwear impression was made by the known left shoe submitted in Item 8 (Item 8-1). The questioned footwear impression was of a left shoe and therefore the known right shoe is excluded as having made the questioned impression. The questioned footwear impressions F2 and F7 correspond in outsole design and physical size with the known right shoe submitted as Item 8 (Item 8-1). Additionally, the questioned footwear impressions exhibit unique identifying characteristics that are also present in the known right shoe; therefore, it was determined that the questioned footwear impressions were made by the known right shoe submitted in Item 8 (Item 8-1). The questioned footwear impressions were of a right shoe and therefore the known left shoe is excluded as having made the questioned impressions. The questioned footwear impressions F3, F4, F5, and F6 were compared to the known shoes submitted as Item 8 (Item 8-1). The questioned footwear impression is of a similar outsole design, however, does not correspond in physical size and/or individual characteristics with the known shoes; therefore, the questioned impressions were not made by the known shoes submitted as Item 8 (Item 8-1). The methodology utilized during this examination includes visual examination, digital retention, and ACE-V. One (1) questioned footwear impression was noted on Item 1, designated as F1 (Q1). One (1) questioned footwear impression was noted on Item 2, designated as F2 (Q2). One (1) questioned footwear impression was noted on Item 3, designated as F3 (Q3). One (1) questioned footwear impression was noted on Item 4, designated as F4 (Q4). One (1) questioned footwear impression was noted on Item 5, designated as F5 (Q5). One (1) questioned footwear impression was noted on Item 6, designated as F6 (Q6). One (1) questioned footwear impression was noted on Item 7, designated as F7 (Q7). Items F1 through F7 were compared to Item 8-1 (Item 8) with the following results: F1 corresponds in outsole design, physical size, and general wear with the known left shoe submitted in Item 8 (Item 8-1). Additionally, the questioned footwear impression exhibits unique identifying characteristics that are also present in the known left shoe; therefore, it was determined that the questioned footwear impression was made by the known left shoe submitted in Item 8 (Item 8-1). This questioned footwear impression is of a left shoe; therefore, the questioned impression was not made by the known right shoe in Item 8 (Item 8-1). F2 and F7 correspond in outsole design, physical size, and general wear with the known right shoe submitted in Item 8 (Item 8-1). Additionally, the questioned footwear impression exhibits unique identifying characteristics that are also present in the known right shoe; therefore, it was determined that the questioned footwear impression were made by the known right shoe submitted in Item 8 (Item 8-1). These questioned footwear impressions were of a right shoe; therefore, the questioned impressions were not made by the known left shoe in Item 8 (Item 8-1). F3 and F4 do not correspond in physical size with the known left shoe submitted in Item 8 (Item 8-1). Additionally, the questioned footwear impressions exhibit unique identifying characteristics that are not present in the known left shoe; therefore, it was determined that the questioned footwear impressions were not made by the known left shoe submitted in Item 8 (Item 8-1). These questioned footwear impressions were those of a left shoe; therefore, the questioned impressions were not made by the known right shoe in Item 8 (Item 8-1). F5 and F6 do not correspond in physical size with the known right shoe submitted in Item 8 (Item 8-1). Additionally, the questioned footwear impressions exhibit unique identifying characteristics that are not present in the known right shoe; therefore, it was determined that the questioned footwear impressions were not made by the known right shoe submitted in Item 8 (Item 8-1). These questioned footwear impressions were those of a right shoe; therefore, the questioned impressions were not made by the known left shoe in Item 8 (Item 8-1). Due to this being a PT, no images were retained in LEIPS.
BQ9P3M- 5335	All the impressions, Q1 through Q7, had a similar general outsole design. Image 26-5335_Q1-Q3 had three questioned impressions found on sandpaper. Q1 Impression: The Q1 impression was a near full-length footwear impression made by a left shoe. The submitted left shoe was identified as having made the Q1 impression based on the agreement of class characteristics (pattern, size, and wear) and multiple randomly acquired characteristics. Q2 Impression: The Q2 impression was a partial footwear impression made by the forefoot area of a right shoe. A small portion of the toe area of this impression was overlapped with the heel area of the Q3 impression. The submitted right shoe was identified as having made the Q2 impression based on the agreement of class characteristics (pattern, size, and wear)

TABLE 2

WebCode-Test	Conclusions
	and multiple randomly acquired characteristics. Q3 Impression: The Q3 impression was a partial footwear impression made by the heel/arch area of a left shoe. A portion of the heel area of this impression overlapped a small area of the toe of the Q2 impression. The submitted shoes were eliminated as having made the Q3 impression based on differences in class characteristics. Image 26-5335_Q4-Q5 had two questioned impressions found on ceramic tiles. Q4 Impression: The Q4 impression was a partial footwear impression made by a left shoe and consisted of the heel, arch, and forefoot area. The submitted shoes were eliminated as having made the Q4 impression based on differences in class characteristics. Q5 Impression: The Q5 impression was a full-length footwear impression made by a right shoe. The submitted shoes were eliminated as having made the Q5 impression based on differences in class characteristics. Image 26-5335_Q6-Q7 had two questioned impressions found on cardboard. Q6 Impression: The Q6 impression was a near full-length footwear impression made by a right shoe. A portion of the heel/arch area was overlapped by the toe area of the Q7 impression. The submitted shoes were eliminated as having made the Q6 impression based on differences in class characteristics. Q7 Impression: The Q7 impression was a near full-length footwear impression made by a right shoe. The toe area of this impression overlapped the heel/arch area of the Q6 impression. The submitted right shoe was identified as having made the Q7 impression based on the agreement of class characteristics (pattern, size, and wear) and multiple randomly acquired characteristics.
BYC9UG-5335	In my opinion, the findings provide conclusive support for the proposition that at least two of the marks present at the scene (labelled as 'Q1' and 'Q7') have been made by the shoes recovered the day after the incident. Note: There were four other footwear marks present at the scene (labelled 'Q3', 'Q4', 'Q5' and 'Q6'); these marks, although of a similar pattern to that seen on the soles, could not have been made by them, in my opinion.
C6H2PC-5335	The footwear imprint (Q1) was made by Item K1 left shoe based on sufficient agreement and observable class and randomly acquired characteristics. The footwear imprints (Q2 and Q7) were made by Item K1 right shoe based on sufficient agreement and observable class and randomly acquired characteristics. Sufficient differences were noted between the characteristics present in the footwear imprints (Q3, Q4, Q5 and Q6) and those present on Item K1 right and left shoes to conclude that the imprints were not made by Item K1.
CDDXVM-5331	A correspondence of pattern, size, wear and accidental damage was found between test prints made using the left shoe and one of the questioned imprints (Q1) on the sandpaper. In subjectively interpreting this shoeprint evidence, consideration is given to the probability of observing these correspondences given the shoe made the imprint, as opposed to observing these correspondences given the shoe did not make the imprint. In my opinion, the evidence provides very strong support to the proposition that the left shoe made this imprint, as opposed to another shoe. A correspondence of pattern, size, wear and accidental damage was found between test prints made using the right shoe and one of the questioned imprints (Q2) on the sandpaper and one of the questioned imprints (Q7) on the cardboard. In my opinion, the evidence provides very strong support to the proposition that the right shoe made these imprints, as opposed to another shoe. I have chosen the term 'very strong support' used in this statement from the following range of conclusions: neutral, slight support, moderate support, strong support, very strong support and extremely strong support. This scale can be used to indicate the level of support for either proposition. Imprints Q3, Q4, Q5 and Q6 were different to the test prints made using the pair of shoes and therefore these imprints were not made by the pair of shoes.
CGC9QM-5331	I was asked to compare photographs of a suspect pair of shoes, K1a – K1c, and photographs of reference impressions of those shoes, K1d-K1g, with photographs of shoeprints collected from a crime scene, Q1-Q7. The following is my opinion and relates only to the items examined. There are thousands of different styles of sole pattern, from many different brands or models of shoes, in the population at any one time. The sole patterns of shoes are, with a few exceptions, continually being updated and changed over time, in response to shifts in fashion and advances in technology. Often shoes with a specific sole pattern are produced in relatively small numbers. Even shoes with a common sole pattern typically represent less than one percent of the shoes in the general population. Shoe soles also accumulate different patterns of wear and random characteristics through use. There is also the potential for shoe

TABLE 2

WebCode-Test	Conclusions
	soles of the same sole pattern to have different wear and random characteristics. By comparing the sole pattern of a shoe to a shoe impression it is possible to determine whether or not that particular shoe could have made that impression. I have compared the images and reference impressions K1 to the shoe impressions Q1 to Q7. This comparison process examines the shoe and the shoe impression to investigate any correspondence or difference in sole pattern and dimensions, the presence of any wear, and the location, dimensions and shape of any randomly acquired characteristics. In subjectively assessing the strength of the comparison findings I have considered two propositions: the probability of finding the shoe impression evidence if the shoe made the impression, and the probability of finding the shoe impression evidence if another shoe made the impression. The statement of opinion as to the scientific significance of the comparison findings between the shoe and the shoe impression is selected from the following scale: is neutral, provides slight support, provides moderate support, provides strong support, provides very strong support, and provides extremely strong support. This scale can be used to indicate the level of support for either proposition. Q1: A correspondence of dimensions, sole pattern, areas of wear and a randomly acquired characteristic were present between the left suspect shoe and the scene shoe impression Q1. Therefore, the left suspect shoe or another left shoe with the same sole pattern, dimensions, wear and randomly acquired characteristic could have made the shoe impression Q1. In my opinion, this combination of sole pattern, dimensions, wear and randomly acquired characteristic is rare and therefore this correspondence provides extremely strong support (high degree of association) for the proposition that the left suspect shoe made the impression Q1 at the scene. Q2: A correspondence of dimensions, sole pattern and randomly acquired characteristics were present between the right suspect shoe and the scene shoe impression Q2. Therefore, the right suspect shoe or another right shoe with the same sole pattern, dimensions, and randomly acquired characteristic could have made the shoe impression Q2. In my opinion, this combination of sole pattern, dimensions, and randomly acquired characteristics is rare and therefore this correspondence provides extremely strong support (high degree of association) for the proposition that the right suspect shoe made the impression Q2 at the scene. Q3 to Q4: A correspondence of general sole pattern was observed between the left suspect shoe and the shoe impressions Q3 and Q4; however, there were discrepancies in dimensions between the suspect shoe and the scene impressions; therefore, in my opinion, the left suspect shoe is excluded from having made the scene impressions Q3 and Q4. Q5 to Q6: A correspondence of general sole pattern was observed between the right suspect shoe and the shoe impressions Q5 and Q6; however, there were discrepancies in dimensions between the suspect shoe and the scene impressions. Therefore, in my opinion, the right suspect shoe is excluded from having made the scene impressions Q5 and Q6. Q7: A correspondence of dimensions, sole pattern and wear were present between the right suspect shoe and the scene shoe impression Q7. Indications of the correspondence of randomly acquired characteristics were also present; however, these were not overly clear. Therefore, the right suspect shoe or another right shoe with the same sole pattern, dimensions, wear and indications of randomly acquired characteristics could have made the shoe impression Q7. In my opinion, this combination of sole pattern, dimensions, wear and indications of randomly acquired characteristics is rare and therefore this correspondence provides very strong support (high degree of association) for the proposition that the right suspect shoe made the impression Q7 at the scene.
D9CHEB-5335	[No Conclusions Reported.]
DKAA7B-5335	For Q1 Q2 and Q7: The findings are far more probable (10.000- 1.000.000) when the shoe print from the crime scene is caused by the shoe K1, than when the shoe print from the crime scene is caused by another unknown shoe. For Q 3 - Q6: The shoe print from the crime scene is not caused by the shoe K1
DV8WD8-5331	Q2 & Q3 found on sand paper matches the right and left of known imprint respectively. Q4 & Q5 found on ceramic tiles matches the left and right of known imprints respectively. Q6 & Q7 found on cardboard matches the right of known imprint. Q2, Q3, Q4, Q5, Q6, and Q7 they match some similar characteristics with significant limiting factors. Q1 matches the left of the known imprints and shows correspondance of class characteristics in addition to unusual wear characteristics.
E2RE89-5331	[No Conclusions Reported.]

TABLE 2

WebCode- Test	Conclusions
E6RQ39- 5335	In my opinion, three of the recovered impressions corresponded to the submitted shoes K1. One of these impressions, from the cardboard, provided CONCLUSIVE support that it was made by the right shoe of K1. The remaining four impressions were different from the submitted shoes K1 and could not have been made by them (conclusive elimination).
ELL9ZJ- 5335	Class characteristics (including sole pattern and degree of wear and tear) and randomly acquired characteristics (their appearances, positions, and agreement with one another) on the soles of the seized footwear were consistent with Q1 and Q7 with no dissimilarities. The seized footwear (left side) was hence identified to have created Q1 and the seized footwear (right side) was identified to have created Q7. While the seized footwear (right side) had the same class characteristics and randomly acquired characteristics which were generally consistent with Q2, some minor dissimilarities between the two were observed. While they could be attributed to different pressure/angle of substrate deposition, the dissimilarities could also be due to differences in the degree of wear - which could not be concluded. The seized footwear, though with the same sole design as Q3, Q4, Q5, and Q6, had dissimilarities between the randomly acquired characteristics, and was hence excluded from having created those impressions.
ENJW9E- 5331	1) The mark shows agreement in pattern and size, degree of wear and fine detail with the sole of the submitted left shoe, such that this shoe is responsible for making the mark. 2) The mark shows agreement in pattern and size, degree of wear and fine detail with the sole of the submitted right shoe, such that this shoe is responsible for making the mark. 3) The mark shows agreement in pattern but differences in size with the sole of the left submitted shoe, such that this shoe is not responsible for making the mark. 4) The mark shows agreement in pattern but differences in size with the sole of the left submitted shoe, such that this shoe is not responsible for making the mark. 5) The mark shows agreement in pattern but differences in size with the sole of the right submitted shoe, such that this shoe is not responsible for making the mark. 6) The mark shows agreement in pattern but differences in size with the sole of the right submitted shoe, such that this shoe is not responsible for making the mark. 7) The mark shows agreement in pattern and size, degree of wear and fine detail with the sole of the submitted right shoe, such that this shoe is responsible for the mark.
EQF3Z7- 5335	Impression Q1 corresponded with tread design, physical size, and wear to the left New Balance shoe. In addition, several voids in the questioned impression corresponded in approximate size, shape, position, and orientation to randomly acquired characteristics in the left New Balance shoe. In the opinion of the examiner, the left New Balance shoe made impression Q1 (Identification). While this opinion cannot specifically exclude all other sources, the quality and extent of corresponding features would not be expected in other footwear. Impression Q2 corresponded with tread design, physical size, and wear to the right New Balance shoe. In addition, a few voids in the questioned impression corresponded in approximate size, shape, position, and orientation to randomly acquired characteristics in the right New Balance shoe. In the opinion of the examiner, the right New Balance shoe made impression Q2 (Identification). While this opinion cannot specifically exclude all other sources, the quality and extent of corresponding features would not be expected in other footwear. Impression Q7 corresponded with tread design, physical size, and wear to the right New Balance shoe. In addition, at least one void in the questioned impressions corresponded in approximate size, shape, position, and orientation to randomly acquired characteristics in the right New Balance shoe. In the opinion of the examiner, impression Q7 was made either by this shoe or by another shoe with corresponding class characteristics, wear, and randomly acquired characteristics as observed in the questioned impression (High degree of association). The corresponding wear and randomly acquired characteristics indicate a strong association; however, the quality and/or quantity were insufficient for an identification. Impressions Q3 and Q4 displayed similarity in tread design to the left New Balance shoe. However, the questioned impressions displayed differences in physical size and general wear to the left New Balance shoe. In the opinion of the examiner, the left New Balance shoe did not make these questioned impressions (Exclusion). Impressions Q5 and Q6 displayed similarity in tread design to the right New Balance shoe. However, the questioned impressions displayed differences in physical size and possible general wear to the right New Balance shoe. In the opinion of the examiner, the right New Balance shoe did not make these questioned impressions (Exclusion).

TABLE 2

WebCode- Test	Conclusions
F97XND- 5335	The questioned impressions in Exhibits 1 - 7 were deemed suitable for comparison and compared to images of the known shoes (Exhibit 8) and images of known impressions (Exhibit 9) said to be from the recovered shoes. A complete evaluation of a questioned impression and a known shoe includes looking at correspondence in tread design, physical size and shape of design present, wear characteristics, and any distinctive characteristics randomly acquired on the sole of the known shoe that are represented in the questioned impression. The questioned impressions in Exhibit 1 corresponded in physical shape, tread design, size of tread, wear and randomly acquired characteristics to the known left shoe represented in Exhibits 8 - 9. Therefore, the known left shoe represented in Exhibits 8 - 9 is the source of the questioned shoe impressions in Exhibit 1 (Source Identification). The questioned impressions in Exhibits 2 and 7 corresponded in physical shape, tread design, size of tread, wear and randomly acquired characteristics to the known right shoe represented in Exhibits 8 - 9. Therefore, the known right shoe represented in Exhibits 8 - 9 is the source of the questioned shoe impressions in Exhibits 2 and 7 (Source Identification). The questioned impressions in Exhibits 3 - 6, although similar in general tread pattern, differed in spacing, wear and/or randomly acquired characteristics to the known shoes represented in Exhibits 8 - 9. Therefore, the questioned impressions in Exhibits 3 - 6 were not made by the known shoes represented in Exhibits 8 - 9 (Exclusion). See the Appendix of this report for further context regarding the conclusions listed above. APPENDIX The following descriptions are meant to provide context to the opinions reached in this report. Not every type of conclusion may be applicable in every report. Source Identification (i.e., Identified) is an examiner's conclusion that the known footwear/tire item made the questioned impression. This conclusion is an examiner's opinion that the known footwear/tire item and the questioned impression have corresponding class characteristics (i.e., outsole design, physical size, and wear) and one or more randomly acquired characteristics with no meaningful differences, and the observed corresponding characteristic are sufficient such that an examiner would not expect to see the same combination of characteristics repeated in a different footwear/tire item. The basis for a source identification conclusion is an examiner's opinion is that the observed corresponding characteristics provide extremely strong support for the proposition that the known footwear/tire item made the questioned impression and extremely weak support for the proposition that a different footwear/tire item made the questioned impression. A source identification is the statement of an examiner's opinion (an inductive inference) that the probability that a different footwear/tire item made the questioned impression is so small that it is negligible. Inclusion based on class and randomly acquired characteristics (i.e., Included) is an examiner's conclusion that the known footwear/tire item probably made the questioned impression. This conclusion is an examiner's opinion that the known footwear/tire item and the questioned impression have corresponding class characteristics and one or more randomly acquired characteristics with no meaningful differences; however, there are limitations associated with the evidence that prevent a source identification opinion. For another footwear/tire item to have made the questioned impression, it would have to exhibit the same observed corresponding characteristics. The basis for an inclusion based on class and randomly acquired characteristics conclusion is an examiner's opinion that the observed corresponding characteristics provide strong support for the proposition that the known footwear/tire item made the questioned impression and weak support for the proposition that a different footwear/tire item made the questioned impression. Inclusion based on class characteristics (i.e., Included) is an examiner's conclusion that the known footwear/tire item could have made the questioned impression. The basis for an inclusion based on class characteristics conclusion is an examiner's opinion that the known footwear/tire item and questioned impression have observed corresponding class characteristics with no meaningful differences. There may be other footwear/tire items with characteristics that are indistinguishable from the known footwear/tire item that could have also made the questioned impression. Inconclusive is an examiner's conclusion that no determination can be reached as to whether the known footwear/tire item could or could not have made the questioned impression. The basis for an inconclusive conclusion is an examiner's opinion that there are limitations associated with the evidence that prevent an examiner from either including or excluding the known footwear/tire item as a possible source of the questioned impression. Support for exclusion is an examiner's conclusion that the known footwear/tire item probably did not make the questioned impression. This conclusion is an examiner's opinion that the known footwear/tire item and questioned impression have different class characteristics and/or randomly acquired characteristics; however, there are limitations associated with the evidence that prevent an examiner from reaching source exclusion conclusion. The basis for a support for exclusion conclusion is

TABLE 2

WebCode- Test	Conclusions
F97ZDH- 5331	an examiner's opinion that the observed characteristics provide strong support for the proposition that a different footwear/tire item made the questioned impression and weak support for the proposition that the known footwear/tire item made the questioned impression. Source exclusion (i.e., Excluded) is an examiner's conclusion that the known footwear/tire item did not make the questioned impression. This conclusion is an examiner's opinion that the known footwear/tire item and questioned impression have different class characteristics and/or randomly acquired characteristics. The basis for a source exclusion conclusion is an examiner's opinion that the observed characteristics provide extremely strong support for the proposition that a different footwear/tire item made the questioned impression and extremely weak or no support for the proposition that the known footwear/tire item made the questioned impression. I was asked to compare photographs of a suspect pair of shoes with photographs of shoe impressions collected from a crime scene, Q1-Q7. The following is my opinion and relates only to the items examined. There are thousands of different styles of sole pattern, from many different brands or models of shoes, in the population at any one time. The sole patterns of shoes are, with a few exceptions, continually being updated and changed over time, in response to shifts in fashion and advances in technology. Often shoes with a specific sole pattern are produced in relatively small numbers. Even shoes with a common sole pattern typically represent less than one percent of the shoes in the general population. Shoe soles also accumulate different patterns of wear and random characteristics through use. There is also the potential for shoe soles of the same sole pattern to have different wear and random characteristics. By comparing the sole pattern of a shoe to a shoe impression it is possible to determine whether or not that particular shoe could have made that impression. I have compared the submitted New Balance shoes to the scene impressions Q1 to Q7. This comparison process examines the shoe and the shoe impression to investigate any correspondence or difference in sole pattern and dimensions, the presence of any wear, and the location, dimensions and shape of any randomly acquired characteristics. In subjectively assessing the strength of the comparison findings I have considered two propositions: the probability of finding the shoe impression evidence if the submitted shoes made the impression, and the probability of finding the shoe impression evidence if another shoe made the impression. The statement of opinion as to the scientific significance of the comparison findings between the shoe and the scene impression is selected from the following scale: is neutral, provides slight support, provides moderate support, provides strong support, provides very strong support, and provides extremely strong support. This scale can be used to indicate the level of support for either proposition. Impressions Q1 and Q2: There was a correspondence of the sole pattern, dimensions, wear features and randomly acquired characteristics between the scene impression Q1 and the left shoe, and between the scene impression Q2 and the right shoe. Therefore, the submitted shoes or other shoes with the same sole pattern, dimensions, wear and areas of randomly acquired characteristics could have left the scene impressions Q1 and Q2 at the scene. However, I would expect to observe these correspondences if the submitted shoes had made these shoe impressions. Conversely, given the large number of different shoe sole patterns and dimensions and possibilities for randomly acquired damage features, I would expect to see differences in these features if these shoe impressions had been made by other shoes. It is not possible to statistically prove that the features of a shoe sole including the pattern, wear and random characteristics are unique to one particular shoe. Statistical proof would require an examination of all other shoes with the same sole pattern, which is a practical impossibility. The strongest statistical determination that can be made is a conclusion of extremely strong support. Therefore, in my opinion, this combination of sole pattern, dimensions, wear and randomly acquired characteristics is rare and therefore this correspondence provides extremely strong support for the proposition that the submitted shoes made the scene impressions Q1 and Q2 as opposed to other shoes. Impression Q7: There was a correspondence of the sole pattern, dimensions, and randomly acquired characteristics, and indications of wear features between the scene impression Q7 and the submitted right shoe. However, the scene impression was faint in areas, making the detail somewhat difficult to visualise. Therefore, the submitted right shoe or another shoe with the same sole pattern, dimensions, wear and randomly acquired characteristics could have left the shoe impression at the scene. However, I would expect to observe these correspondences if the submitted shoe had made the shoe impression. Conversely, given the large number of different shoe sole patterns and dimensions and possibilities for randomly acquired damage features, I would expect to see differences in these features if the shoeprint had been made by another shoe. In my opinion, this combination of sole pattern, dimensions, wear and randomly acquired characteristics provides very

TABLE 2

WebCode-Test	Conclusions
	strong support for the proposition that the submitted shoe made the impression as opposed to another shoe. Impressions Q3, Q4, Q5 and Q6: Although the sole pattern of the submitted shoes was similar to the scene impressions Q3, Q4, Q5 and Q6, the dimensions did not correspond between the scene and test impressions. This indicated the scene impressions had been made by shoes with a similar sole pattern but a larger size than the submitted shoes. Therefore, the submitted shoes can be excluded as having made the scene impressions Q3, Q4, Q5 and Q6.
FFNFWF-5331	I have considered the proposition that the shoe in item 1 (OMG 1) made the detail noted in item 1 (OMG 1) photo Q1. In my opinion the result of this examination provides strong support for this proposition. I have considered the proposition that the shoe in item 1 (OMG 1) made the detail noted in item 1 (OMG 1) photo Q2. In my opinion the result of this examination provides strong support for this proposition. I have considered the proposition that the shoe in item 1 (OMG 1) did not make the detail noted in item 1 (OMG 1) photo Q3. In my opinion the result of this examination provides strong support for this proposition. I have considered the proposition that the shoe in item 1 (OMG 1) did not make the detail noted in item 1 (OMG 1) photo Q4. In my opinion the result of this examination provides strong support for this proposition. I have considered the proposition that the shoe in item 1 (OMG 1) did not make the detail noted in item 1 (OMG 1) photo Q5. In my opinion the result of this examination provides strong support for this proposition. I have considered the proposition that the shoe in item 1 (OMG 1) did not make the detail noted in item 1 (OMG 1) photo Q6. In my opinion the result of this examination provides strong support for this proposition. I have considered the proposition that the shoe in item 1 (OMG 1) made the detail noted in item 1 (OMG 1) photo Q7. In my opinion the result of this examination provides strong support for this proposition. The scale I have used in the assessing the strength of evidence is as follows: No support – Weak Support – Support – Strong Support – Conclusive Support
FJRY79-5331	Footwear (or tire) impression analysis is based on the comparison of class and randomly acquired characteristics. Corresponding class and randomly acquired characteristics support the conclusion that the footwear (or tire) was the source of, and made, the questioned impression. Currently, the possibility that other footwear (or tires) having the same class and randomly acquired characteristics cannot be statistically calculated. Impression Q1 and the K1 known left shoe have similar class characteristics and randomly acquired characteristics of sufficient quantity and quality. Therefore, impression Q1 was made by the K1 known left shoe. Impressions Q2, Q7, and the K1 known right shoe have similar class characteristics and randomly acquired characteristics of sufficient quantity and quality. Therefore, impressions Q2 and Q7 were made by the K1 known right shoe. Impressions Q3, Q4, Q5, and Q6 have a similar general outsole design at the K1 known shoes; however, the impressions were made with shoes that are larger than the K1 known shoes. Consequently, impressions Q3, Q4, Q5, and Q6 were not made by the K1 known shoes.
GDFDVG-5335	Q1: Identification Q2: There is correspondence of overall pattern shape, design and spacing of the elements between right shoe Q2 and K1f. There are at least 6 nicks / cuts that can be observed at the same position / orientation between Q2 and K1f. Q3: Exclusion Q4: In my opinion, misalignment in the design element and spacing, coupled with the cut / nick not observed on the crime scene impression Q4, suggest that we can exclude the shoe from having made the scene impression. Q5: There was no correspondence of the spacing of the design elements and nicks / cuts present on the scene impression was not observed on the test exemplar and vice versa. Therefore, in my opinion, we can exclude the shoes from having made the scene impression. Q6: There is no correspondence of overall design and spacing of the elements between Q6 and K1f. Misalignment in the design element / spacing between scene impression and test exemplar (circled in green). The nick/cuts that are present on the scene impression is not observed on the test exemplar. Therefore, in my opinion, we can exclude the shoes from having made the scene impression. Q7: There is correspondence of overall pattern shape, design and spacing of the elements between Q7 and K1f. Cut and nick present on the test exemplar was seen on the scene impression. Stippling pattern on the heel area of the shoes also seemed to correspond. There is also an area of wear that is at the heel area of the shoes.
GWTV2F-5335	Seven (7) manufactured pattern impressions, that appear to be of footwear origin, suitable for comparison were noted in Exhibits Q1 through Q7. Two (2) manufactured pattern impressions noted in

TABLE 2

WebCode- Test	Conclusions
	Exhibits Q2 and Q7 were made by the right shoe depicted in Exhibits K1a through K1g based on design, physical size, shape, wear and randomly acquired characteristics. This opinion means that the observed class characteristics and randomly acquired characteristics correspond and the examiner would not expect to see the same agreement of features repeated in an impression that came from a different source. One (1) manufactured pattern impression noted in Exhibit Q1 was made by the left shoe depicted in Exhibits K1a through K1g based on design, physical size, shape, wear and randomly acquired characteristics. This opinion means that the observed class characteristics and randomly acquired characteristics correspond and the examiner would not expect to see the same agreement of features repeated in an impression that came from a different source. Four (4) manufactured pattern impressions noted in Exhibits Q3, Q4, Q5 and Q6 were not made by the shoes depicted in Exhibits K1a through K1g based on differences in physical size. This opinion means that there are sufficient features in disagreement such that the examiner would not expect to see the same disagreement repeated in an impression that came from the same source.
H2LG9A- 5331	The Items Q1 through Q7 questioned footwear impressions were analyzed, compared and evaluated with the Items K1 left and K1 right known footwear. The Item Q1 questioned footwear impression corresponds in outsole design, shape, physical size, general wear, mold and three (3) randomly acquired characteristics with the Item K1 left known shoe. The Item Q2 questioned footwear impression corresponds in outsole design, shape, physical size, general wear, specific wear and three (3) randomly acquired characteristics with the Item K1 right known shoe. The Item Q3 questioned footwear impression does not correspond in physical size, general wear and mold with the Items K1 left and K1 right known shoes. The Item Q4 questioned footwear impression does not correspond in physical size, general wear and mold with the Items K1 left and K1 right known shoes. The Item Q5 questioned footwear impression does not correspond in physical size, general wear and mold with the Items K1 left and K1 right known shoes. The Item Q6 questioned footwear impression does not correspond in physical size, general wear and mold with the Items K1 left and K1 right known shoes. The Item Q7 questioned footwear impression corresponds in outsole design, shape, physical size, general wear, specific wear, mold and one (1) randomly acquired characteristics with the Item K1 right known shoe. Based on the above factors, it is the opinion of this examiner that; The Item K1 left known shoe, was the source of, and made, the Item Q1 questioned footwear impressions resulting in an identification. Another item of footwear, being the source of the impression, is considered a practical impossibility. The Item K1 right known shoe, was the source of, and made, the items Q2 and Q7 questioned footwear impressions resulting in an identification. Another item of footwear, being the source of the impression, is considered a practical impossibility. The Items K1 left and K1 right shoes were excluded as the source of questioned footwear impressions Q3, Q4, Q5 and Q6.
H66BAF- 5335	The known left shoe that was recovered is identified as the source of questioned impression Q1. The wear pattern and class characteristics of the known left shoe correspond to the wear pattern and class characteristics of the questioned impression Q1. The degree of wear in the questioned impression matches the degree of wear observed in the known left shoe. Randomly acquired characteristics (RACs) such as scratches, nicks and indentations observed on the questioned impression Q1 were in the same relative position and sequence and in agreement with those on the known left shoe. Since the questioned impression Q1 and the known left shoe share agreement of class characteristics and RACs of sufficient quality and quantity, the questioned impression Q1 was made by the known left shoe. The known right shoe that was recovered is identified as the source of questioned impressions Q2 and Q7. The wear pattern and class characteristics of the known right shoe correspond to the wear pattern and class characteristics of the questioned impressions Q2 and Q7. RACs such as scratches, nicks and indentations observed on the questioned impressions were in the same relative position and sequence and in agreement with those on the known right shoe. Since the questioned impressions Q2 and Q7 and the known right shoe share agreement of class characteristics and RACs of sufficient quality and quantity, the questioned impressions Q2 and Q7 were made by the known right shoe. Due to non-correspondence in dimensions, RACs and/or wear pattern, the known shoes, both left and right, are excluded as the source of questioned impressions Q3, Q4, Q5 and Q6.
H92ZR9- 5331	The seven (7) questioned footwear impressions designated F1 through F7 were compared to the known pair of shoes submitted in Item 8 with the following results: The questioned footwear impression

TABLE 2

WebCode- Test	Conclusions
	designated F1 corresponds in outsole design, physical size, and general wear with the known left shoe in Item 8. Additionally, the questioned footwear impression corresponds in five (5) RACs that are also present in the known shoe. Therefore, it was determined that the questioned footwear impression F1 was made by the known left shoe submitted as Item 8. The questioned footwear impression F1 is of a left shoe; therefore, it was not made by the known right shoe in Item 8. The questioned footwear impression designated F2 corresponds in outsole design, physical size, and general wear with the known right shoe in Item 8. Additionally, the questioned footwear impression corresponds in four (4) RACs that are also present in the known shoe. Therefore, it was determined that the questioned footwear impression F2 was made by the known right shoe submitted as Item 8. The questioned footwear impression F2 is of a right shoe; therefore, it was not made by the known left shoe in Item 8. The questioned footwear impression designated F3 is similar in outsole design with the known left shoe submitted in Item 8. However, the questioned footwear impression does not correspond in the mold characteristics (texture/stippling) or general wear with the known left shoe. Therefore, it was determined that the questioned footwear impression F3 was not made by the known left shoe in Item 8. The questioned footwear impression F3 is of a left shoe; therefore, it was not made by the known right shoe in Item 8. The questioned footwear impression designated F4 corresponds in outsole design with the known left shoe submitted in Item 8. However, the questioned footwear impression does not correspond in the presence and placement of RACs with the known left shoe. Additionally, the questioned footwear impression is larger than the known shoe. Therefore, it was determined that the questioned footwear impression F4 was not made by the known left shoe in Item 8. The questioned footwear impression F4 is of a left shoe; therefore, it was not made by the known right shoe in Item 8. The questioned footwear impression designated F5 corresponds in outsole design with the known right shoe submitted in Item 8. However, the questioned footwear impression does not correspond in the presence and placement of RACs with the known right shoe. Additionally, the questioned footwear impression is larger than the known shoe. Therefore, it was determined that the questioned footwear impression F5 was not made by the known right shoe in Item 8. The questioned footwear impression F5 is of a right shoe; therefore, it was not made by the known left shoe in Item 8. The questioned footwear impression designated F6 is similar in outsole design with the known right shoe submitted in Item 8. However, the questioned footwear impression does not correspond in the mold characteristics (texture/stippling) or in the presence and placement of RACs with the known right shoe. Additionally, the questioned footwear impression is larger than the known shoe. Therefore, it was determined that the questioned footwear impression F6 was not made by the known right shoe in Item 8. The questioned footwear impression F6 is of a right shoe; therefore, it was not made by the known left shoe in Item 8. The questioned footwear impression designated F7 corresponds in outsole design, physical size, and general wear with the known right shoe in Item 8. Additionally, the questioned footwear impression corresponds in four (4) RACs that are also present in the known shoe. Therefore, it was determined that the questioned footwear impression F7 was made by the known right shoe submitted as Item 8. The questioned footwear impression F7 is of a right shoe; therefore, it was not made by the known left shoe in Item 8.
HAWJUA- 5335	Questioned Impression Q6 was compared to the images of the known footwear (K1). Sufficient differences were noted in the comparison of the outsole design between Questioned Impression Q6 and the left outsole of K1. In the opinion of the examiner, the left outsole of K1 was not the source of, and did not make, the Questioned Impression Q6. EXCLUSION Sufficient differences were noted in the comparison of size, manufactured texture and randomly acquired characteristics between the Questioned Impression Q6 and the right outsole of K1. In the opinion of the examiner, the right outsole of K1 was not the source of, and did not make, the Questioned Impression Q6. EXCLUSION Questioned Impression Q7 had a similar outsole design, size and wear to the right outsole of K1. There were five randomly acquired characteristics and feathering that corresponded between Questioned Impression Q7 and the right outsole of K1. In the opinion of the examiner, the right outsole of K1 was the source of, and made, the Questioned Impression Q7. Another item of footwear being the source of the impression is considered a practical impossibility. IDENTIFICATION
HPMPGA- 5335	For Q1, Q2 and Q7 we would comment that there are correspondence of design and physical size, class characteristics, in addition to one or more randomly acquired characteristics between the questioned and known item. However, we find more correspondence between the known item and Q1 and Q2, than Q7, therefore the difference in conclusion. For Q3-Q6 we would comment that the

TABLE 2

WebCode-Test	Conclusions
	questioned and known items exhibit similar design, but differences in physical size.
HT8HTC-5331	The photographs of the three impressions (Q1-Q3) on the sandpaper, the two impressions (Q4-Q5) on the ceramic tile, and the two impressions (Q6-Q7) on the cardboard were visually and digitally compared to the photographs (K1a-K1c) of the New Balance shoes and the corresponding test impressions (K1d-K1g). The impression (Q1) was IDENTIFIED as having been made by the known LEFT New Balance shoe. The impressions (Q2 and Q7) were IDENTIFIED as having been made by the known RIGHT New Balance shoe. The LEFT and RIGHT New Balance shoes can be EXCLUDED as the source of the impressions (Q3-Q6).
HUJ82G-5335	[No Conclusions Reported.]
HZ6A27-5335	[No Conclusions Reported.]
J2VV83-5335	Identification - Questioned and known items share agreement of class and randomly acquired characteristics of sufficient quality and quantity. This is the highest degree of association. - Item Q1 was identified as having been made by the Left shoe of Item K1. - Item Q2 was identified as having been made by the Right shoe of Item K1. - Item Q7 was identified as having been made by the Right shoe of Item K1. Exclusion - Questioned and known items exhibit sufficient differences of class and/or randomly acquired characteristics. This is the highest degree of non-association. - Item Q3 was excluded as the source of the impression from Item K1. - Item Q4 was excluded as the source of the impression from Item K1. - Item Q5 was excluded as the source of the impression from Item K1. - Item Q6 was excluded as the source of the impression from Item K1.
JFR8F7-5335	* Shoe prints Q5 and Q6 have different sizes and different individualizing points than the known imprints. * Shoe print Q4 has different size. * Shoe print Q3 has different individualizing points than the known imprints.
JW77V6-5331	The Q1 impression was made by the K1 left shoe. The Q2 impression was made by the K1 right shoe. The Q3 impression was made by a left shoe. The K1 left shoe did not make the Q3 impression. The Q4 impression was made by a left shoe. The K1 left shoe did not make the Q4 impression. The Q5 impression was made by a right shoe. The K1 right shoe did not make the Q5 impression. The Q6 impression was made by a right shoe. The K1 right shoe did not make the Q6 impression. The Q7 impression was made by the K1 right shoe. Footwear impression analysis is based on the comparison of class and randomly acquired characteristics. Corresponding class and randomly acquired characteristics support the conclusion that the footwear was the source of, and made, the questioned impression. Currently, the possibility that other footwear having the same class and randomly acquired characteristics cannot be statistically calculated.
K376JZ-5331	Based on the presence of corresponding randomly acquired characteristics, K1 left shoe was identified as the source of Q1. K1 right shoe was identified as the source of Q2 and Q7 due to corresponding RACS while the general outsole design and size of K1 was similar to that of Q3, Q4, Q5, and Q6, both left and right shoes were eliminated from being a source of Q3-Q6 due to the lack of corresponding RACS or differing orientations.
K4JGLB-5335	The recovered shoeprint in Q1 was made by the recovered left shoe. The recovered shoeprints in Q2 and Q7 were made by the recovered right shoe. The recovered shoeprints in Q3-Q6 were not made by the pair of the recovered shoes.
KTKTL2-5331	[No Conclusions Reported.]
KY4798-5335	The questioned impressions from item 1.A were visually analyzed and seven questioned footwear impressions were determined to be suitable for comparison. Three questioned footwear impressions were determined to have been made by a left shoe, and four questioned footwear impressions were determined to have been made by a right shoe. Two questioned impressions from item 1.A were visually

TABLE 2

WebCode-Test	Conclusions
	compared to item 1.B.01; the known footwear was identified as the source of the questioned impressions. One questioned impression from item 1.A was visually compared to item 1.B.02; the known footwear was identified as the source of the questioned impression. Two questioned impressions from item 1.A were visually compared to item 1.B.01; the known footwear was excluded as the source of the questioned impressions. Two questioned impressions from item 1.A were visually compared to item 1.B.02; the known footwear was excluded as the source of the questioned impressions. Note: An identification decision is reached when the questioned impression and the known impression have corresponding detail, such that the examiner would not expect to see the same arrangement of details repeated in an impression that came from a different source.
KZZMK4-5335	The findings give strong support that prints Q1 and Q2 were left by the shoes of item K1. The findings give very strong support that print Q7 was left by the right shoe of item K1. The findings give very strong support that prints Q3-Q6 were not left by the shoes of item K1.
LCMXN2-5331	[No Conclusions Reported.]
LECK3A-5335	The submitted images were printed and verified to be approximately 1:1 on both axis. The questioned and known impressions were compared visually, with the aid of transparencies, and with the aid of Adobe Photoshop 2026. All submitted images were suitable for comparison. The known footwear, as represented in images K1a-g, are identified as the source of the impressions identified as Q1, Q2, and Q7. Sufficient similarities were observed in pattern, size, wear, and individualizing details to conclude that the represented footwear are the source of these impressions. The known footwear, as represented in images K1a-g, are eliminated as the source of the impressions identified as Q3, Q4, Q5, and Q6. Sufficient differences in the size or the mold were observed to eliminate the represented footwear as the source of these impressions. The printed images were assigned laboratory item number 001-01 and will be submitted to be used as part of the technical review. Twenty-three (23) pages of notes are associated with this report.
LWDABZ-5335	[No Conclusions Reported.]
M7F6QB-5335	Q1. A comparison was conducted between the scene impression (Q1) and the test impression (26-5335_K1g.tif and 26-5335_K1f.tif) using side by side method and digital overlays. The characteristics observed exhibit strong associations between the questioned impression Q1 and the left known shoe; however, the quality and/or quantity were insufficient for an identification. The left known shoe is a possible source of the questioned impression and could have produced the impression. Other shoes with the same class characteristics are included as possible sources only if they display the same wear and/or randomly acquired characteristics observed in the questioned impression. Q2. A comparison was conducted between the scene impression (Q2) and the test impression (26-5335_K1g.tif and 26-5335_K1f.tif) using side by side method and digital overlays. The left known shoe was the source of, and made, the questioned impression. The chance of another shoe being the source of the impression is considered negligible. Q3 A comparison was conducted between the scene impression (Q3) and the test impression (26-5335_K1g.tif and 26-5335_K1f.tif) using side by side method and digital overlays. The left known shoe is a possible source of the questioned impression and therefore could have produced the impression. Other shoes with the same class characteristics are included as possible sources. Q4. A comparison was conducted between the scene impression (Q4) and the test impression (26-5335_K1g.tif and 26-5335_K1f.tif) using side by side method and digital overlays. Due to differences observed, namely the size and spacing between the repeating tread pattern, the left known shoe was not the source of and did not make the questioned impression. Q5. A comparison was conducted between the scene impression (Q15) and the test impression (26-5335_K1g.tif and 26-5335_K1f.tif) using side by side method and digital overlays. Due to differences observed, namely the size and spacing between the repeating tread pattern, the right known shoe was not the source of and did not make the questioned impression. Q6. A comparison was conducted between the scene impression (Q6) and the test impression (26-5335_K1g.tif and 26-5335_K1f.tif) using side by side method and digital overlays. Due to differences observed, namely the size and spacing between the

TABLE 2

WebCode-Test	Conclusions
	repeating tread pattern, the right known shoe was not the source of and did not make the questioned impression. Q7. A comparison was conducted between the scene impression (Q7) and the test impression (26-5335_K1g.tif and 26-5335_K1f.tif) using side by side method and digital overlays. The characteristics observed exhibit strong associations between the questioned impression Q1 and the right known shoe; however, the quality and/or quantity were insufficient for an identification. The right known shoe is a possible source of the questioned impression and could have produced the impression. Other shoes with the same class characteristics are included as possible sources only if they display the same wear and/or randomly acquired characteristics observed in the questioned impression.
MRXYXW-5331	The submitted footwear is a pair of New balance trainers pattern code New balance 0026. Pattern codes in this report have been obtained using the National Footwear Reference Collection (NFRC). Footwear with this under sole pattern New balance 0026 is a rarely encountered pattern type seen in [Laboratory] Forensic Footwear Unit. This information is on the National Footwear Reference Collection (NFRC). The marks labelled Q1, Q2, Q3, Q4, Q5, Q6, Q7 are the same sole pattern as the submitted footwear. A full comparison has been carried out and the results are as follows:- As well as the aforementioned pattern correspondence the marks labelled Q1, Q2 and Q7 were found to correspond in size/configuration, general wear and specific wear. Furthermore, there is an area of wear induced damage on one block (feathering) in mark Q7. The precise character and appearance of this feathering correspond exactly with that on the under surface of the right submitted shoe. There were at least 6 features identified across the 3 scene marks that correspond to randomly acquired damage present on the sole of the left and right shoes in terms of size, shape, location and orientation. In my opinion, the results provide Conclusive support for the view that the submitted left and right shoes made the New balance marks Q1, Q2 and Q7 recovered. In my opinion the submitted New balance 0026 shoes could not have made the marks Q3, Q4, Q5 and Q6 as they are too small and therefore have been Eliminated.
NKCJQ6-5331	Exhibit 4.1 (Q1) was identified as having been made by the known left shoe, K1g. Exhibits 4.2 (Q2) and 6.2 (Q7) were identified as having been made by the known right shoe, K1g. Exhibits 4.3 (Q3) and 5.1 (Q4) were not made by the known left shoe, K1g, based on differences in class characteristics. Exhibits 4.3 (Q3) and 5.1 (Q4) could have been made by the same left shoe based on class and some individual characteristics; however, insufficient detail precludes a more conclusive determination. Suspect footwear includes New Balance athletic shoes of similar outsole design; however, any suspect footwear should be submitted for examination. Exhibits 5.2 (Q5) and 6.1 (Q6) were not made by the known right shoe, K1g, based on differences in class characteristics. Exhibits 5.2 (Q5) and 6.1 (Q6) were made by the same right shoe. Suspect footwear includes New Balance athletic shoes of similar outsole design; however, any suspect footwear should be submitted for examination.
NVD7H2-5331	The methodologies utilized in this examination include: visual examination and ACE-V. Item 1-1: One (1) questioned footwear impression was noted on Item 1-1, designated F1. F1 was compared to Item 8 (Item 8-1) with the following results: F1 corresponds in outsole design, physical size, and general wear with the known left shoe submitted in Item 8. Additionally, F1 exhibits unique identifying characteristics that are also present in the known left shoe; therefore, it was determined that F1 was made by the known left shoe submitted in Item 8. F1 is of a left shoe; therefore, it was not made by the right shoe submitted in Item 8. Item 2-1: One (1) questioned footwear impression was noted on Item 2-1, designated F2. F2 was compared to Item 8 (Item 8-1) with the following results: F2 corresponds in outsole design, physical size, and general wear with the known right shoe submitted in Item 8. Additionally, F2 exhibits unique identifying characteristics that are also present in the known right shoe; therefore, it was determined that F2 was made by the known right shoe submitted in Item 8. F2 is of a right shoe; therefore, it was not made by the left shoe submitted in Item 8. Item 3-1: One (1) questioned footwear impression was noted on Item 3-1, designated F3. F3 was compared to Item 8 (Item 8-1) with the following results: F3 differs in physical size from the left shoe submitted in Item 8. Therefore, F3 was not made by the left shoe submitted in Item 8. F3 is of a left shoe; therefore, it was not made by the right shoe submitted in Item 8. Item 4-1: One (1) questioned footwear impression was noted on Item 4-1, designated F4. F4 was compared to Item 8 (Item 8-1) with the following results: F4 differs in physical size from the left shoe submitted in Item 8. Therefore, F4 was not made by the left shoe submitted in Item 8. F4 is of a left shoe; therefore, it was not made by the right shoe submitted in Item 8. Item 5-1: One (1) questioned footwear

TABLE 2

WebCode-Test	Conclusions
	impression was noted on Item 5-1, designated F5. F5 was compared to Item 8 (Item 8-1) with the following results: F5 differs in physical size from the right shoe submitted in Item 8. Therefore, F5 was not made by the right shoe submitted in Item 8. F5 is of a right shoe; therefore, it was not made by the left shoe submitted in Item 8. Item 6-1: One (1) questioned footwear impression was noted on Item 6-1, designated F6. F6 was compared to Item 8 (Item 8-1) with the following results: F6 differs in physical size from the right shoe submitted in Item 8. Therefore, F6 was not made by the right shoe submitted in Item 8. F6 is of a right shoe; therefore, it was not made by the left shoe submitted in Item 8. Item 7-1: One (1) questioned footwear impression was noted on Item 7-1, designated F7. F7 was compared to Item 8 (Item 8-1) with the following results: F7 corresponds in outsole design, physical size, and general wear with the known right shoe submitted in Item 8. Additionally, F7 exhibits unique identifying characteristics that are also present in the known right shoe; therefore, it was determined that F7 was made by the known right shoe submitted in Item 8. F7 is of a right shoe; therefore, it was not made by the left shoe submitted in Item 8.
NVTCV7-5331	TrasoScan system, Lucia Forensic 8.10 software and additionally a transparent foil were used in this test. The comparisons of the enclosed footwear impressions (Q1-Q7 and K1a-K1g) concerned the physical size and shape of a shoe soles, a sole design, and random individual identifying characteristics. There were present some individual identifying characteristics on the surface of shoe soles, being the comparative material. Similar individual characteristics were found in evidence materials marked Q1, Q2 and Q7. Thus, it was concluded that an items Q3, Q4, Q5 and Q6 are different from the comparative material.
PCF3E7-5331	Impression Q1 was made by the left shoe Item K1 and excluded being made by the right shoe K1, Impression Q2 was made by the right shoe Item K1 and excluded being made by the left shoe K1, Item K1 was excluded from making impression Q3 to Q6 and Impression Q7 showed general class characteristics with the right shoe Item K1 (refer to the attached scale of conclusions) and excluded from being made by the left shoe K1.
PKVMY6-5331	The methodology utilized includes: visual examination, digital retention, and ACE-V. Seven (7) questioned footwear impressions were noted on Items 1 through 7 (designated F1-F7) and were compared to the known shoes submitted as Item 8 (8-1). One (1) of the questioned footwear impressions (F1) corresponded in outsole design, physical size, and general wear with the known left shoe submitted as Item 8 (8-1). Additionally, the questioned footwear impressions exhibit unique identifying characteristics that are also present in the known left shoe; therefore, it was determined that the questioned footwear impression was made by the known left shoe submitted in Item 8 (8-1). The questioned impressions and the known standard share the same class characteristics, to include outsole design, physical size, general wear, and correspond in the presence and location of 4 or more Randomly Acquired Characteristics (RACs) of sufficient quality and quantity. The right shoe submitted as Item 8 (8-1) was eliminated/excluded as having been made these questioned impressions. Two (2) of the questioned footwear impressions (F2, F7) corresponds in outsole design, physical size, and general wear with the known right shoe submitted as Item 8 (8-1). Additionally, the questioned footwear impressions exhibit unique identifying characteristics that are also present in the known right shoe; therefore, it was determined that the questioned footwear impression was made by the known right shoe submitted in Item 8 (8-1). The questioned impressions and the known standard share the same class characteristics, to include outsole design, physical size, general wear, and correspond in the presence and location of 4 or more Randomly Acquired Characteristics (RACs) of sufficient quality and quantity. The left shoe submitted as Item 8 (8-1) was eliminated/excluded as having been made these questioned impressions. The four (4) remaining questioned footwear impression (F3, F4, F5, F6) were compared to the known shoes submitted as Item 8 (8-1). The questioned footwear impressions do correspond in outsole design; however, the impressions do not correspond in physical size and wear with the known shoes submitted; therefore, the questioned impression was not made by the known shoes submitted in Item 8 (8-1).
PKVPNA-5331	Q1 The left known shoe was the source of, and made, the questioned impression Q1. The chance of another shoe being the source of the impression is considered negligible. The is an identification result Q2 The right known shoe was the source of, and made, the questioned impression Q2. The chance of another shoe being the source of the impression is considered negligible. The is an identification result

TABLE 2

WebCode-Test	Conclusions
	Q3 Due to differences observed (size) the left known shoe as not the source of and did not make the questioned impression Q3. This is an exclusion result. Q4 Due to differences observed (size) the left known shoe as not the source of and did not make the questioned impression Q4 This is an exclusion result. Q5 Due to differences observed (size) the right known shoe as not the source of and did not make the questioned impression Q5 This is an exclusion result. Q6 Due to differences observed (size) the right known shoe as not the source of and did not make the questioned impression Q6 This is an exclusion result. Q7 The right known shoe was the source of, and made, the questioned impression Q7. The chance of another shoe being the source of the impression is considered negligible The is an identification result
PRTE8Y-5335	1. Imprint Q1 is an imprint of a left shoe that correspond in class characteristics (shape, design and wear) and also share some randomly acquired characteristics (RACs) with the left shoe (K1). It is my opinion that there is a full association between the left shoe (K1) and the imprint Q1 ("Identification"). 2. Imprint Q2 is an imprint of a right shoe that correspond in class characteristics (shape, design and wear) and also share some randomly acquired characteristics (RACs) with the right shoe (K1). It is my opinion that there is a full association between the right shoe (K1) and the imprint Q2 ("Identification"). 3. Imprint Q3 is an imprint of a right shoe that correspond in shape and design, but differs in size and wear and some RACs from the right shoe (K1). It is my opinion that there are sufficient differences between the right shoe (K1) and the imprint Q3 ("Exclusion"). 4. Imprint Q4 is an imprint of a right shoe that correspond in shape and design, but differs in size and wear and some RACs from the right shoe (K1). It is my opinion that there are sufficient differences between the right shoe (K1) and the imprint Q4 ("Exclusion"). 5. Imprint Q5 is an imprint of a right shoe that correspond in shape and design, but differs in size and wear and some RACs from the right shoe (K1). It is my opinion that there are sufficient differences between the right shoe (K1) and the imprint Q5 ("Exclusion"). 6. Imprint Q6 is an imprint of a right shoe that correspond in shape and design, but differs in size and wear and some RACs from the right shoe (K1). It is my opinion that there are sufficient differences between the right shoe (K1) and the imprint Q6 ("Exclusion"). 7. Imprint Q7 is an imprint of a right shoe that correspond in class characteristics (shape, design and wear) and also share some randomly acquired characteristics (RACs) with the right shoe (K1). It is my opinion that there is a high degree of association between the right shoe (K1) and the imprint Q7.
PW3RNX-5331	There is a correspondence in tread design, size, and acquired characteristics between the impression (Q1) and the left shoe exemplar. The left shoe is identified as having made the questioned impression (Q1). There is a correspondence in tread design, size, and acquired characteristics between the impressions (Q2 and Q7) and the right shoe exemplar. The right shoe is identified as having made the questioned impressions (Q2 and Q7). There is a dissimilarity in size between the questioned impressions (Q3, Q4, Q5, and Q6) and the left and right exemplar impressions. The shoes that made the exemplar impressions are excluded as having made these questioned impressions.
PYAWFZ-5331	[No Conclusions Reported.]
Q6BV4V-5331	[No Conclusions Reported.]
Q9W9DY-5331	My findings provide extremely strong support for the view that the footwear K1 made the scene impressions Q1, Q2 and Q7, rather than some other footwear did. My findings also show that the footwear K1 did not make the scene impressions Q3, Q4, Q5 or Q6. I have chosen the above phrase from the following scale: weak support, moderate support, moderately strong support, strong support, very strong support, extremely strong support. If the circumstances differ from the above please contact me as soon as possible as re-evaluation of the examination and conclusion may be required.
QGQD8Z-5331	The methodologies utilized in this examination include: visual examination and ACE-V. One (1) questioned footwear impression was noted on Item 1, designated as F1. One (1) questioned footwear impression was noted on Item 2, designated as F2. One (1) questioned footwear impression was noted on Item 3, designated as F3. One (1) questioned footwear impression was noted on Item 4, designated as F4. One (1) questioned footwear impression was noted on Item 5, designated as F5. One (1)

TABLE 2

WebCode-Test	Conclusions
	questioned footwear impression was noted on Item 6, designated as F6. One (1) questioned footwear impression was noted on Item 7, designated as F7. Questioned footwear impressions F1 through F7 were compared to the known standards submitted in Item 8 (Item 8-1) with the following results: F1 corresponds in outsole design, physical size, and general wear with the known left shoe submitted in Item 8. Additionally, the questioned footwear impression exhibits four (4) unique identifying characteristics that are also present in the known left shoe; therefore, it was determined that the questioned footwear impression was made by the known left shoe submitted in Item 8. F1 is of a left shoe; therefore, it could not have been made by the known right shoe submitted as Item 8. F2 corresponds in outsole design, physical size, and general wear with the known right shoe submitted in Item 8. Additionally, the questioned footwear impression exhibits four (4) unique identifying characteristics that are also present in the known right shoe; therefore, it was determined that the questioned footwear impression was made by the known right shoe submitted in Item 8. F2 is of a right shoe; therefore, it could not have been made by the known left shoe submitted as Item 8. F3 is of similar outsole design to the known left shoe submitted in Item 8; however, the questioned footwear impression does not correspond in physical size, general wear, or in the presence of individual characteristics with the known left shoe; therefore, the questioned footwear impression was not made by the known left shoe submitted in Item 8. F3 is of a left shoe; therefore, it could not have been made by the known right shoe submitted as Item 8. F4 is of similar outsole design to the known left shoe submitted in Item 8; however, the questioned footwear impression does not correspond in physical size, general wear, or in the presence of individual characteristics with the known left shoe; therefore, the questioned footwear impression was not made by the known left shoe submitted in Item 8. F4 is of a left shoe; therefore, it could not have been made by the known right shoe submitted as Item 8. F5 is of similar outsole design to the known right shoe submitted in Item 8; however, the questioned footwear impression does not correspond in physical size, general wear, or in the presence of individual characteristics with the known right shoe; therefore, the questioned footwear impression was not made by the known right shoe submitted in Item 8. F5 is of a right shoe; therefore, it could not have been made by the known left shoe submitted as Item 8. F6 is of similar outsole design to the known right shoe submitted in Item 8; however, the questioned footwear impression does not correspond in physical size, general wear, or in the presence of individual characteristics with the known right shoe; therefore, the questioned footwear impression was not made by the known right shoe submitted in Item 8. F6 is of a right shoe; therefore, it could not have been made by the known left shoe submitted as Item 8. F7 corresponds in outsole design, physical size, and general wear with the known right shoe submitted in Item 8. Additionally, the questioned footwear impression exhibits four (4) unique identifying characteristics that are also present in the known right shoe; therefore, it was determined that the questioned footwear impression was made by the known right shoe submitted in Item 8. F7 is of a right shoe; therefore, it could not have been made by the known left shoe submitted as Item 8.
QRNGBU-5335	Questioned impression Q1 corresponded in size, tread design, and texturing to the left New Balance shoe represented by Items K1a - K1g. In addition, voids in Q1 corresponded to randomly acquired characteristics (RACs) on the shoe. In the opinion of the examiner, the left New Balance shoe made the questioned impression Q1 (Identification). While this opinion cannot specifically exclude all other sources, the quality and extent of corresponding features would not be expected in other footwear. Questioned impressions Q2 and Q7 corresponded in size, tread design, and texturing to the right New Balance shoe represented by Items K1a - K1g. In addition, voids in the questioned impressions corresponded to randomly acquired characteristics (RACs) on the shoe. Also, questioned impression Q7 corresponded in Schallamach pattern to the test impressions of the right New Balance shoe. In the opinion of the examiner, the right New Balance shoe made the questioned impressions Q2 and Q7 (Identification). While this opinion cannot specifically exclude all other sources, the quality and extent of corresponding features would not be expected in other footwear. Although questioned impressions Q3 - Q6 corresponded in general tread design to the New Balance shoes represented by Items K1a - K1g, they differed in size. In the opinion of the examiner, these shoes did not make the questioned impressions Q3 - Q6 (Exclusion).
QTJZDV-5331	Q1-Left shoe- The submitted footwear K was examined and compared to the impression visible in Q1. The question impression corresponds to the known footwear in tread design, tread size, tread wear and randomly acquired characteristics including slashes in the surface. In the opinion of the analyst, the

TABLE 2

WebCode-Test	Conclusions
	randomly acquired characteristics are of high quality and discriminability. There is strong support that Q1 was made by K based on the correspondence of compared characteristics. Q2-Right shoe- The submitted footwear K was examined and compared to the impression visible in Q2. The question impression corresponds to the known footwear in tread design, tread size, tread wear and randomly acquired characteristics including slashes and two gouges in the surface. In the opinion of the analyst, the randomly acquired characteristics are of high quality and discriminability. There is strong support that Q2 was made by K based on the correspondence of compared characteristics. Q3-Left shoe- The submitted footwear K was examined and compared to the impression visible in Q3. Q3 and K are different in tread wear, tread size and randomly acquired characteristics. Thus, Q3 could not have been made by K. Q4-Left shoe- The submitted footwear K was examined and compared to the impression visible in Q4. Q4 and K are different in tread wear, tread size and randomly acquired characteristics. Thus, Q4 could not have been made by K. Q5-Right shoe- The submitted footwear K was examined and compared to the impression visible in Q5. Q5 and K are different in tread wear, tread size and randomly acquired characteristics. Thus, Q5 could not have been made by K. Q6-Right shoe- The submitted footwear K was examined and compared to the impression visible in Q6. Q6 and K are different in tread wear, tread size and randomly acquired characteristics. Thus, Q6 could not have been made by K. Q7-Right shoe- The submitted footwear K was examined and compared to the impression visible in Q7. The question impression corresponds to the known footwear in tread design, tread size, tread wear and randomly acquired characteristics including a gouge in the surface. In the opinion of the analyst, the randomly acquired characteristics are of high quality and discriminability. There is strong support that Q7 was made by K based on the correspondence of compared characteristics.
QX9J9X-5335	The impressions Q1, Q2, and Q7 demonstrate consistent similarities in pattern, design, size, and both general and individual characteristics when compared to the corresponding known impressions. These concordant features support the technical assessment that the referenced impressions are compatible with having originated from the same footwear model and condition represented in the known samples. (Q1=Left side) (Q2 and Q7=Right side) In contrast, impressions Q3, Q4, Q5, and Q6 exhibit similarities in pattern, design, and size; however, they present notable dissimilarities in general and individual characteristics. These discrepancies indicate that these impressions lack sufficient correspondence to associate them with the footwear represented by the known impressions.
R3XHZY-5335	The left impression (Q1) appears similar in physical size and design, and wear and/or randomly acquired characteristics to the shoe Item K1. In the opinion of the examiner, the particular known footwear was the source of, and made, the questioned impression. Another item of footwear being the source of the impression is considered a practical impossibility. Refer to "IDENTIFICATION" in Appendix C. The right impressions (Q2 & Q7) appear similar in physical size and design, and wear and/or randomly acquired characteristics to the shoe Item K1. In the opinion of the examiner, the particular known footwear was the source of, and made, the questioned impressions. Another item of footwear being the source of the impression is considered a practical impossibility. Refer to "IDENTIFICATION" in Appendix C. The left impressions (Q3 & Q4) were dissimilar in physical size and/or design to the shoe Item K1. In the opinion of the examiner, the particular known footwear (Item K1) was not the source of, and did not make, the impressions. Refer to "EXCLUSION" in Appendix C. The right impressions (Q5 & Q6) were dissimilar in physical size and/or design to the shoe Item K1. In the opinion of the examiner, the particular known footwear (Item K1) was not the source of, and did not make, the impressions. Refer to "EXCLUSION" in Appendix C.
R3YFAU-5331	[No Conclusions Reported.]
R4UYCV-5335	The comparative examination of the seven (07) questioned imprints (Q1 to Q7) shows: - Very clear similarities between the footwear imprint (Q1) and the inked imprints of the known left outsole, with respect to both class and individual characteristics. - Very clear similarities between the footwear imprints (Q2 and Q7) and the inked imprints of the known right outsole, with respect to both class and individual characteristics. - Clear dissimilarities between the footwear imprints (Q3 and Q4) and the inked imprints of the known left outsole, with respect to individual characteristics. - Clear dissimilarities between the footwear imprints (Q5 and Q6) and the inked imprints of the known right outsole, with respect to

TABLE 2

WebCode-Test	Conclusions
	individual characteristics.
R8VXV2-5331	Exhibit 4.1 (Impression Q1) was identified as having been made by the submitted left shoe, K1 Left. Exhibits 4.2 and 6.2 (Impressions Q2 and Q7) were identified as having been made by the submitted right shoe, K1 Right. Exhibits 4.3 and 5.1 (Impressions Q3 and Q4) were not made by the submitted left shoe, K1 Left. Exhibits 4.3 and 5.1 could have been made by the same left shoe or by two shoes whose outsoles were made in the same mold. Suspect shoes include New Balance shoes with a similar outsole design as the submitted shoe. Exhibits 5.2 and 6.1 (Impressions Q5 and Q6) were not made by the submitted right shoe, K1 Right. Exhibits 5.2 and 6.1 were made by a second right shoe. Suspect shoes include New Balance shoes with a similar outsole design as the submitted shoe.
REBHWR-5335	The questioned impressions (Q1 through Q7) were compared to the recovered shoes depicted in Images K1a through K1g with the following conclusions: Impression Q1 was made by the left shoe. Impression Q2 and Q7 were made by the right shoe. Impressions Q3, Q4, Q5, and Q6 were not made by either of the shoes.
RJ9XRU-5335	The questioned imprint Q1 is associated with the sole of the left shoe. They share agreement of class characteristics and randomly acquired characteristics of sufficient quality and quantity with the recovered left shoesole and the known imprints, which were made with the left shoesole. The recovered left shoe was the source of, and made, the questioned imprints Q1. Another item of footwear being the source of the imprints is considered a practical impossibility. The questioned imprints Q2 and Q7 are associated with the sole of the right shoe. They correspond in class characteristics of design, physical size, and general wear and randomly acquired characteristics to the recovered right shoe and the known imprints, which were made with the right shoesole. The quantity of the observed randomly acquired characteristics was sufficient for an identification. Other footwear with the same class characteristics observed in the imprints are included in the population of possible sources only if they display the same wear and randomly acquired characteristics observed in the questioned imprints Q2 and Q7. Sufficient differences were noted in the comparison of class characteristics between the questioned imprints Q3 - Q6 and the known imprints of the recovered shoes. The recovered shoes were not the source of, and did not make the questioned imprints Q3 - Q6.
RPD3WY-5335	Comparison of the partial left shoe imprint labeled found on sandpaper, Q1, to the recovered left shoe revealed an identification. Comparison of the partial right shoe imprint labeled found on sandpaper, Q2, to the recovered right shoe revealed an identification. Comparison of the partial left shoe imprint labeled found on sandpaper, Q3, to the recovered left shoe revealed an elimination. Comparison of the partial left shoe imprint labeled found on ceramic tiles, Q4, to the recovered left shoe revealed an elimination. Comparison of the right shoe imprint labeled found on ceramic tiles, Q5, to the recovered right shoe revealed an elimination. Comparison of the right shoe imprint labeled found on cardboard, Q6, to the recovered right shoe revealed an elimination. Comparison of the right shoe imprint labeled found on cardboard, Q7, to the recovered right shoe revealed an identification.
RZVKQR-5335	The impression Q1 has been identified as having been made with the left of the secured shoes, as the comparison has established agreement with regard to sole pattern, size, and specific details resulting from damage to the outer sole. These details are transferred from the outsole to the print by contact between sole and surface. The impressions Q2 and Q7 has been identified as having been made with the right of the secured shoes, as the comparison has established agreement with regard to sole pattern, size, and specific details resulting from damage to the outer sole. These details are transferred from the outsole to the print by contact between sole and surface. The impressions Q3, Q4, Q5, and Q6 are excluded from being deposited with the secured footwear, as a discrepancy between the footwear and the impression has been established during the comparison.
TGVU93-5331	On examination, I found: i) The individual characteristic marks on the questioned imprint Q1 to be similar to the individual characteristic marks on the left suspect shoe. ii) The individual characteristic marks on the questioned imprints Q2 and Q7 to be similar to the individual characteristic marks on the right suspect shoe. iii) The individual characteristic marks on the questioned imprints Q3, Q4, Q5 and Q6 to be different to individual characteristic marks on the left and right suspect shoes. Therefore, I am of the opinion that: i) The questioned imprint Q1 was made by the left suspect shoe. ii) The questioned

TABLE 2

WebCode-Test	Conclusions
	imprints Q2 and Q7 were made by right suspect shoe. iii) The questioned imprints Q3, Q4, Q5 and Q6 were not made by the left or right shoes.
TM7VFR-5335	The recovered footwear, K1, outsole design includes V-shaped/irregular lugs in ball area, rectangular lugs on edges, with a moderate degree of wear. K1 and test impressions of K1 were compared to each of the impressions Q1-Q7. Q1 corresponds in specific outsole design, physical size, general wear, and some randomly acquired characteristics to the recovered K1 left shoe. Therefore, it was determined that this impression was made by the K1 left shoe. Q2 and Q7 correspond in specific outsole design, physical size, general wear, and some randomly acquired characteristics to the recovered K1 right shoe. Therefore, it was determined that these impressions were made by the K1 right shoe. Q3, Q4, Q5 and Q6 are similar in general outsole design to the recovered shoes, K1, but have differences in physical size, degree of wear and/or contain randomly acquired characteristics not present in K1. Therefore, it was determined that these impressions could not have been made by K1.
TM7X6W-5331	Photographs of the shoe prints submitted as Q1 through Q7 were examined and compared to the photographs of known soles and test shoe prints submitted as K1. The shoe print submitted as Q1 was produced by the K1 left shoe based on the sufficient agreement of individual characteristics. The shoe print submitted as Q2 was probably made by the K1 right shoe based on some agreement of individual characteristics; however, the agreement was insufficient for an identification. The shoe print submitted as Q7 was produced by the K1 right shoe based on the sufficient agreement of individual characteristics. The shoe prints submitted as Q3, Q4, Q5, and Q6 were not made by either of the K1 shoes based on class differences. The above analysis began on 05/04/2026.
TQ3ML4-5335	VICTIM: Unknown SUSPECT: CRIME: Voluntary DATE: 04/07/2026 DEPT: CTS DR#: Proficiency Examination(s): (Method ACE-V) Footwear Comparison Item(s) Examined: OCCL Item Description 1 Digital photographs of crime scene shoeprint impressions, known shoes, and known inked exemplars I was requested to compare digital crime scene photographs of shoeprint impressions (Item #1) to digital photographs of the known shoes (New Balance shoes) and digital photographs of the known inked exemplars (Item #1) to determine if the submitted photographs of the known shoes/exemplars were the source of the impressions. QUESTIONED IMPRESSION(s) (Q): Q-1: was a scene photograph of a partial shoeprint impression on sandpaper. The impression displayed multiple horizontal and vertical bars along the edges and bars with an inward curve along the edges and in the ball area. The heel displayed curved lines with small irregular dots. Q-2: was a scene photograph of a partial shoeprint impression on sandpaper. The impression displayed a few horizontal bars along the edges and bars with an inward curve. Q-3: was a scene photograph of a partial shoeprint impression on sandpaper. The impression displayed multiple horizontal bars along the edges and curved lines and bars with small irregular dots in the heel area. Q-4: was a scene photograph of a partial shoeprint impression on ceramic tiles. The impression displayed multiple horizontal and some vertical bars along the edges. It also displayed bars with an inward curve. Curved lines and bars with small irregular dots were in the heel area. Q-5: was a scene photograph of a right shoeprint impression on ceramic tiles. The impression displayed multiple horizontal and vertical bars along the edges and bars with an inward curve in the ball area. Curved lines with small irregular dots were in the heel area. Q 6-7: was a scene photograph of right shoeprint impressions on cardboard. The impressions displayed multiple horizontal and vertical bars along the edges and bars with an inward curve along the edges and in the ball area. The heel displayed curved lines with small irregular dots. KNOWN SHOES/TIRES (K): CTS advised the known shoes were manufactured by New Balance and the shoe tag read: • WL515NAB • US W 7.5, US M 6, UK 5.5, EUR 38 • CM 24.5, MFG: 05/2025 K-1a: was a photograph of a left and a right shoe outsole lighted from above. The outsoles displayed multiple horizontal bars along the edges and vertical bars in the toe area. It also displayed multiple bars with inward curves along the edges, in the ball, and arch areas. Horizontal thick lines were in the toe area, and horizontal and curved lines with irregular small dots were in the heel area. K1b – K1c: were oblique lighted photographs of a left and a right shoe outsole. The outsoles displayed the same design as the K-1a. K1d-K1g: were inked imprints (exemplars) (light ink and dark ink) of the left and the right shoe outsoles of the known shoes. The outsoles displayed the same designs as the K-1a. All digital photographs of the known shoes and known inked exemplars (Items K1a-K1g) provided by CTS represented K-1 known left and right shoe. Results and Interpretations: (The results apply to the sample(s) as received and/or collected.) The K-1 known left shoe was identified as being the source of

TABLE 2

WebCode-Test	Conclusions
	the Q-1 questioned impression. The K-1 known left shoe and the Q-1 questioned impression share agreement of class and randomly acquired characteristics of sufficient quality and quantity. The particular known left shoe was the source of, and made, the questioned impression. Another shoe being the source of the impression is considered a practical impossibility. The K-1 known right shoe was identified as being the source of the Q-2 questioned impression. The K-1 known shoe and the Q-2 questioned impression share agreement of class and randomly acquired characteristics of sufficient quality and quantity. There was apparent specific degree of wear between the K-1 known right shoe, and the Q-2 questioned impression; however, it was difficult to see some of the details in the photographs of the known right shoe provided. The particular known right shoe was the source of, and made, the questioned impression. Another shoe being the source of the impression is considered a practical impossibility. The K-1 known right shoe was identified as being the source of the Q-7 questioned impression. The K-1 known shoe and the Q-7 questioned impression share agreement of class and randomly acquired characteristics of sufficient quality and quantity. There was apparent specific degree of wear between the K-1 known right shoe, and the Q-7 questioned impression; however, it was difficult to see some of the details in the photographs of the known right shoe provided. The particular known right shoe was the source of, and made, the questioned impression. Another shoe being the source of the impression is considered a practical impossibility. The K-1 known right shoe was excluded from being the source of the Q-1, 3-6 questioned impressions. Sufficient differences were noted in the comparison of class characteristics between the questioned impressions and the known right shoe. The known right shoe was not the source of, and did not make, the Q-1, 3-6 questioned impressions. The K-1 known left shoe was excluded from being the source of the Q 2-7 questioned impressions. Sufficient differences were noted in the comparison of class characteristics between the questioned impressions and the known left shoe. It is also important to note that the Q 5-7 questioned impressions were made by a right shoe, and not a left shoe. The known left shoe was not the source of, and did not make, the Q 2-7 questioned impressions.
TZPPKQ-5335	The left New Balance shoe (Item K1 Left) was identified as the source of one of the impressions from the scene (Item Q1). The right New Balance shoe (Item K1 Right) was identified as the source of two of the impressions from the scene (Items Q2 and Q7). The New Balance shoes were eliminated as the source of four of the impressions from the scene (Items Q3-Q6).
UAB48T-5331	The Q1 impression and the K1 left shoe share agreement of class and randomly acquired characteristics. The K1 shoe was identified as making this impression. The Q2 impression and the K1 right shoe share agreement of class and randomly acquired characteristics. The K1 shoe was identified as making this impression. The Q7 impression and the K1 right shoe share agreement of class and randomly acquired characteristics. The K1 shoe was identified as making this impression. The Q3, Q4, Q5, and Q6 impressions and the K1 shoes exhibit dissimilarities. The K1 shoes were excluded as making these impressions.
UDBF4T-5335	Exclusion – Sufficient differences were noted between the Q3FW1 impression and those present in the Item K1a left and right shoes. Exclusion – Sufficient differences were noted between the Q4FW1 impression and those present in the Item K1a left and right shoes. Exclusion – Sufficient differences were noted between the Q5FW1 impression and those present in the Item K1a left and right shoes. Exclusion – Sufficient differences were noted between the Q6FW1 impression and those present in the Item K1a left and right shoes. Identification - The Q1FW1 impression was made by the Item K1a left shoe based on sufficient agreement of class and randomly acquired characteristics. Identification - The Q2FW1 impression was made by the Item K1a right shoe based on sufficient agreement of class and randomly acquired characteristics. Identification - The Q7FW1 impression was made by the Item K1a right shoe based on sufficient agreement of class and randomly acquired characteristics.
UGUGZZ-5335	Comparison of the partial left shoe imprint labeled Q1 to the recovered left shoe revealed an identification. Comparison of the partial right shoe imprint labeled Q2 to the recovered right shoe revealed a high degree of association. Comparison of the partial left shoe imprint labeled Q3 to the recovered left shoe revealed an elimination. Comparison of the partial left shoe imprint labeled Q4 to the recovered left shoe revealed an elimination. Comparison of the right shoe imprint labeled Q5 to the recovered right shoe revealed an elimination. Comparison of the right shoe imprint labeled Q6 to the recovered right shoe revealed an elimination. Comparison of the partial right shoe imprint labeled Q7 to

TABLE 2

WebCode-Test	Conclusions
	the recovered right shoe revealed an association of class characteristics.
UHZZYW-5335	A footwear comparison was conducted between the the question impressions and the known shoe impressions with the following results: Question impression Q1, was compared and identified as being produced by the known left shoe impression; the question and known impression are both consistent in size and outsole pattern, and have multiple RAC's in common Question impressions Q2 and Q7, were compared and identified as being produced by the known right shoe impression; the question and known impressions are both consistent in size and outsole pattern, and have multiple RAC's in common Question impressions Q3, Q4, Q5, and Q6, were excluded from having been produced by either the right or left known she impressions, they were all consistent in outsole pattern but differ in size and have no RAC's in common.
V4YM4X-5331	Impression Q1 was made by the left shoe of item K1. Impression Q2 has a high degree of correspondence of class characteristics as well as two observed randomly acquired characteristics between the impression and item K1. Impression Q3 was not made by item K1. Impression Q4 was not made by item K1. Impression Q5 was not made by item K1. Impression Q6 was not made by item K1. Impression Q7 was made by the right shoe of item K1.
V7VTUP-5335	Q1 corresponded in tread design, physical size, wear patterns and at least three randomly acquired characteristics to the left New Balance shoe. In the opinion of the examiner, the left New Balance shoe made questioned impression Q1 (Identification). While this opinion cannot specifically exclude all other sources, the quality and extent of corresponding features would not be expected in other footwear. Q2 corresponded in tread design, physical size, wear patterns and at least two randomly acquired characteristics to the right New Balance shoe. In the opinion of the examiner, the right new Balance shoe made questioned impression Q2 (Identification). While this opinion cannot specifically exclude all other sources, the quality and extent of corresponding features would not be expected in other footwear. Q7 corresponded in tread design, physical size, wear patterns and at least one randomly acquired characteristic to the right New Balance shoe. There is a second possible randomly acquired characteristic that corresponds; however, due to limited clarity in that portion of impression Q7, it could not be confirmed. In the opinion of the examiner, questioned impression Q7 was made either by the right New Balance shoe or by another shoe with corresponding class characteristics, wear, and randomly acquired characteristic(s) as observed in questioned impression Q7 (High degree of association). The corresponding wear and randomly acquired characteristic indicate a strong association; however, the quality and/or quantity were insufficient for an identification. Q3 and Q4 corresponded in tread design; however, there were differences observed in physical size to the left New Balance shoe. In the opinion of the examiner, the left New Balance shoe did not make questioned impressions Q3 and Q4 (Exclusion). Q5 and Q6 corresponded in tread design; however, there were differences observed in physical size to the right New Balance shoe. In the opinion of the examiner, the right New Balance shoe did not make questioned impressions Q5 and Q6 (Exclusion).
VAQMRQ-5331	The submitted images and known impressions of the suspect shoes (K1a-K1g) were examined and compared to the questioned impressions visible in Q1-Q7. Q1 corresponds to the known left shoe in tread pattern, tread size, tread wear, and randomly acquired characteristics including scratches, nicks, and gouges in the tread surface. In the opinion of the analyst, the randomly acquired characteristics are of high quality and discriminability. There is strong support that Q1 was made by the known left shoe based on the correspondence of compared characteristics. Q2 and Q7 correspond to the known right shoe in tread pattern, tread size, tread wear, and randomly acquired characteristics including scratches, nicks, and gouges in the tread surface. In the opinion of the analyst, the randomly acquired characteristics are of high quality and discriminability. There is strong support that Q2 and Q7 were made by the known right shoe based on the correspondence of compared characteristics. Q3 and Q4 correspond to the known left shoe in tread pattern however, Q3 and Q4 are different in tread size. Thus, Q3 and Q4 could not have been made by the known left shoe. Q5 and Q6 correspond to the known right shoe in tread pattern however, Q5 and Q6 are different in tread size. Thus, Q5 and Q6 could not have been made by the known right shoe.

TABLE 2

WebCode-Test	Conclusions
VLK2P3-5335	A total of 7 questioned impressions (Q1 to Q7) from the crime scene were analysed and compared against the recovered "New Balance" shoes. All of the impressions were of high clarity and quality with minimal distortion (i.e., only very slight signs of movement or smudges). This positively contributed to the analysis and comparison efforts. Upon general analysis of the impressions, they were all found to share the same class characteristics (i.e., outsole pattern) as that of the recovered shoes. This alone increased the degree of association of each questioned impression to (C) Association of class characteristics, of the SWGTREAD Conclusion Standard. However, upon comparison of fine details (i.e., RACs), it was found that corresponding and reproducible RACs were only present between the recovered shoes and Q1, Q2 and Q7. The level of association for these questioned impressions were then increased to (A) Identification. On the other hand, there were several dissimilarities (i.e., in the degree of wear and lack of corresponding, reproducible RACs) between the recovered shoes and Q3, Q4, Q5 and Q6. The most obvious sign occurring in all 4 impressions that directly eliminated association was that several parts of the outsole design in the questioned impressions were found to be misaligned in comparison to the recovered shoes despite there being minimal distortion. The level of association for these questioned impressions were then established to be (G) Exclusion. Further analysis of Q3, Q4, Q5 and Q6 revealed that Q3 and Q4 was likely made by the same shoe as the stippling pattern on their heel aligns when superimposed. However, there is a lack of RACs to determine if they were indeed made by the same shoe, or just made by shoes manufactured from the same mold. As such, they were established to be (C) Association of class characteristics. On the other hand, Q5 and Q6 has two corresponding RACs and were likely made by the same shoe. They were established to be (B) High degree of association.
VMGG3Y-5335	Results of Laboratory Examination: Seven questioned (Q) impressions (Q-1 through Q-7) from Items #4-#6 were compared to the known shoes. An evaluation of a questioned footwear impression(s) and known footwear includes looking at correspondence in observed class characteristic(s) (i.e. tread design; approximate physical size and shape of design present; degree of wear; etc.) and randomly acquired characteristic(s) of the known footwear that are represented in the questioned footwear impression(s). Q1 and the known left (K1L) shoe share a combination of randomly acquired characteristics and class characteristic(s) that demonstrate Q1 was made by K1L. (Identification) Q2 and the known right (K1R) shoe share a combination of randomly acquired characteristics and class characteristic(s) that demonstrate Q2 was made by K1R. (Identification) Q3 and K1R differ in tread shape (left versus right). Therefore, K1R is excluded as the source of Q3. (Exclusion) Q3 and K1L correspond in overall tread design, but differences were noted in the designs within elements. Therefore, the K1L is excluded as the source of Q3. (Exclusion) Q4 and K1R differ in tread shape (left versus right). Therefore, K1R is excluded as the source of Q4. (Exclusion) Q4 and K1L correspond in overall tread design, but differences were noted in the designs within elements. Therefore, K1L is excluded as the source of Q4. (Exclusion) Q5 and K1R correspond in overall tread design, but differences were noted in the designs within elements. Therefore, the K1R is excluded as the source of Q5. (Exclusion) Q5 and K1L differ in tread shape (left versus right). Therefore, K1L is excluded as the source of Q5. (Exclusion) Q6 and K1R correspond in overall tread design, but differences were noted in the designs within elements. Therefore, the K1R is excluded as the source of Q6. (Exclusion) Q6 and K1L differ in tread shape (left versus right). Therefore, K1L is excluded as the source of Q6. (Exclusion) Q7 and K1R share a combination of randomly acquired characteristics and class characteristic(s) that demonstrate Q7 was made by K1R. (Identification) Additional comparisons to Q3, Q4, Q5 and Q6 can be made upon the submission of other known footwear. Item 7 was created by the scientist and will be retained by the Laboratory. Footwear evidence examination conclusion scale: Identification The questioned footwear impression(s) and the known item share a combination of randomly acquired characteristic(s) and class characteristics that demonstrates the questioned footwear impression(s) were made by the known footwear. High Degree of Association The questioned footwear impression(s) and the known item correspond in observed class characteristics and specific wear and/or randomly acquired characteristic(s) that may be lacking in detail or size. Association of Class Characteristics The questioned footwear impression(s) correspond in class characteristics (ie: tread design; approximate size of tread; edge bounding elements; possible wear; etc.) to the known footwear. Limited Association Class Characteristics The questioned footwear impression(s) correspond in tread design to the known footwear, but there are limiting factor(s) to the examination. Examples may include poor quality of the impression, lack of detail, lack of scale, substrate interference, commonality of the tread pattern, and/or possible distortion in the image(s). Lacks Sufficient Detail A

TABLE 2

WebCode- Test	Conclusions
	comparison was conducted, however, the questioned impression is of limited quality and no conclusion could be reached regarding an association or an exclusion between the questioned impression and the known footwear. Indications of Non-Association The questioned footwear impression exhibits some dissimilarities to the known footwear impression, but lacks sufficient quality or detail for an exclusion to be made. Exclusion The questioned footwear impression does not correspond to the known footwear impression and can be excluded as being the source of the questioned footwear item. I hereby certify that the above report is true and accurate and represents my opinions and interpretations.
WA6HMX-5335	The questioned prints Q1 (left print), Q2 and Q7 (right prints) show sufficient correspondence in pattern, size and randomly acquired characteristics with the suspects shoes K1. K1 was used to make these prints. Q3, Q4, Q5 and Q6 differ in pattern details and size. They could not have been made by the suspects shoe K1.
WBZYYU-5331	In conclusion of footwear imprint evidence was visually compared with the given footprint on three different surfaces (sand paper, ceramic tiles & cardboard) after comparing the evidence it was answered accordingly to the range of conclusions standard provided.
X7FTFP-5335	When addressing the issue of whether the questioned impressions could have been made by the known footwear, given my findings, in my opinion, there is conclusive support for the view that at least two of the questioned impressions were made by the known shoes. The known shoes can be excluded from making marks Q3, Q4, Q5 & Q6.
XBTGCH-5335	[No Conclusions Reported.]
XEZM2M-5335	The submitted digital images depicting questioned footwear impressions reportedly on sandpaper (Q1 through Q3), ceramic tiles (Q4 and Q5), and cardboard (Q6 and Q7) were visually compared to digital images of the outsoles of known shoes and test impressions of the shoes. All submitted digital images were burned to a disc. Impression Q1 corresponded in tread design (including texturing), physical size, and general wear characteristics to the outsole of the known left shoe. Voids in the impression corresponded in size, shape, position, and orientation to randomly acquired characteristics present on the known left shoe. In the opinion of the examiner, the known left shoe made impression Q1 (Identification). While this opinion cannot specifically exclude all other sources, the quality and extent of corresponding features would not be expected in other footwear. Impression Q2 corresponded in tread design, physical size, and general wear characteristics to the outsole of known right shoe. Voids in the impression corresponded in size, shape, position, and orientation to randomly acquired characteristics present on the known right shoe. In the opinion of the examiner, the known right shoe made impression Q2 (Identification). While this opinion cannot specifically exclude all other sources, the quality and extent of corresponding features would not be expected in other footwear. Impression Q7 corresponded in tread design (including texturing), physical size, and general wear characteristics to the outsole of known right shoe. Correspondence in Schallamach pattern was observed on at least one element. Additionally, at least one small void in the forefoot of the questioned impression corresponded in size, shape, position, and orientation to an area of damage on the shoe. In the opinion of the examiner, impression Q7 was made either by this shoe or by another shoe with corresponding class characteristics, wear, and randomly acquired characteristics as observed in the questioned impression (High degree of association). The corresponding wear and randomly acquired characteristics indicate a strong association; however, the quality and quantity were insufficient for an identification. Although impressions Q3, Q4, Q5, and Q6 corresponded in tread design to portions of the known shoes, the physical size of these impressions did not correspond to the outsole of the known shoes. In the opinion of the examiner, the known shoes did not make impressions Q3, Q4, Q5, and Q6 (Exclusion).
XN283U-5335	The images from item 1.A were visually analyzed and seven questioned footwear impressions were determined to be suitable for comparison. Two questioned impressions from item 1.A, determined to be made by a right shoe, were visually compared to item 1.B.01; the known footwear was identified as the source of the impressions. Two questioned impressions from item 1.A; determined to be made by a right shoe, were visually compared to item 1.B.01; the known footwear was excluded as the source of the impressions. One questioned impression from item 1.A, determined to be made by a left shoe, was

TABLE 2

WebCode-Test	Conclusions
	visually compared to item 1.B.02; the known footwear was identified as the source of the impression. Two questioned impressions from item 1.A, determined to be made by a left shoe, were visually compared to item 1.B.02; the known footwear was excluded as the source of the impressions. Note: An identification decision is reached when the questioned impression and the known impression have corresponding detail, such that the examiner would not expect to see the same arrangement of details repeated in an impression that came from a different source.
XPXNER-5331	COMPARISONS: Compared the partial, questioned footwear impressions of value, labeled Q1 through Q7, with the images of the known shoes, test impressions, and transparencies in Submissions 001 and 001-A. RESULTS: The partial, questioned footwear impression of value, Q1, was made by the known left shoe in Submission 001. The partial, questioned footwear impressions of value, Q2 and Q7, were made by the known right shoe in Submission 001. The partial, questioned footwear impressions of value, Q3 through Q6, were not made by the known shoes in Submission 001.
XV3JXR-5331	F1 was compared to the known footwear standards submitted as Item 8 (Item 8-1). F1 was identified as having been made by the known left footwear standard submitted as Item 8 (Item 8-1). F1 is from a left shoe; therefore, F1 was not made by the known right footwear standard submitted as Item 8 (Item 8-1). F2 and F7 were compared to the known footwear standards submitted as Item 8 (Item 8-1). F2 and F7 were identified as having been made by the known right footwear standard submitted as Item 8 (Item 8-1). F2 and F7 are from a right shoe; therefore, F2 and F7 were not made by the known left footwear standard submitted as Item 8 (Item 8-1). F3, F4, F5, and F6 were compared to the known footwear standards submitted as Item 8 (Item 8-1). F3, F4, F5, and F6 were of a different outsole design size; therefore, F3, F4, F5, and F6 were excluded as having been made by the known footwear standards.
XYZBN-5331	Comparison of Q1 – Q7 to the known footwear, K1, revealed the following: Questioned footwear impression Q1 and the known footwear, K1 (left), are consistent with respect to tread design, size and randomly acquired characteristics. Therefore, questioned footwear impression Q1 was made by the known footwear, K1 (left). Questioned footwear impressions Q2 and Q7 and the known footwear, K1 (right), are consistent with respect to tread design, size, and randomly acquired characteristics. Therefore, questioned footwear impressions Q2 and Q7 were made by the known footwear, K1 (right). Questioned footwear impressions Q3 – Q6 and the known footwear, K1 (left and right), are dissimilar with respect to size. Therefore, questioned footwear impressions Q3 – Q6 could not have been made by the submitted footwear, K1.
Y648PN-5335	In the opinion of this examiner, the known right footwear, is the source of, and made, the questioned impressions Q2 and Q7. Another item of footwear being the source of these impressions is considered a practical impossibility. In the opinion of this examiner, the known left footwear, is the source of, and made, the questioned impression Q1. Another item of footwear being the source of these impressions is considered a practical impossibility. In the opinion of this examiner, the known right/left footwear, are not the source of, and did not make the questioned impressions Q3, Q4, Q5, and Q6.
Y6JD4T-5335	Q1: The shoeprint found at the crime scene matches the reference shoe/sole impression from the left shoe in terms of pattern and size. The sole of the reference shoe exhibits unique sets of characteristics resulting from mechanical influences. At least four of these characteristics are present in the shoeprint found at the crime scene and are therefore distinctive. Q2: The crime scene shoeprint only shows part of a sole print. The pattern elements appear in the same shape and size on the right reference shoe. The walking surface of the reference shoe exhibits unique sets of characteristics resulting from mechanical influences. At least three of these characteristics are also found in the crime scene shoeprint. Q7: The crime scene shoeprint matches the reference shoe/sole impression from the right shoe in terms of pattern and size. The sole of the reference shoe exhibits unique sets of features caused by mechanical forces. At least one of these features is present in the crime scene shoeprint.
YCLMAK-5335	Q1 through Q7 were compared to K1. There is strong support that Q1 came from the left shoe of K1. There is strong support that Q2 and Q7 came from the right shoe of K1. The questioned impressions and the known footwear correspond in design and size class characteristics and specific characteristics of wear/use, including several randomly acquired characteristics of high quality and discriminability. Dissimilarities may also be observed. The observed characteristics provide overwhelmingly more support

TABLE 2

WebCode-Test	Conclusions
	for the proposition that the questioned impressions came from the known footwear than for the proposition that the questioned impressions came from a different source. Q3, Q4, Q5, and Q6 were excluded from K1 based on sizing, differing wear patterns, and texture differences. Sufficient exclusionary differences were noted in the comparison of class characteristics and distinguishing characteristics between the questioned impression and the known footwear to state that the prospect of finding the observed characteristics, if the two items came from the same source, is negligible.
YF283R-5331	Item 1 consists of two shoes (left and right), which were subitemized as left and right. [Note: this wording represents an artifact of the disparity between CTS item numbers and laboratory subitemization procedure, there isn't a good way to render exactly equivalent wording for both.] Comparative analysis between the Item Q1 impression and the Item K1 left shoe revealed correspondence of class characteristics (pattern, physical size, and general condition of wear), and multiple randomly acquired characteristics. It was concluded that the Item K1 left shoe was the source of, and made, the Item Q1 impression. Another shoe being the source of the impression is considered a practical impossibility. Comparative analysis between the Item Q2 and Q7 impressions and the Item K1 right shoe revealed correspondence of class characteristics (pattern, physical size, and general condition of wear), and multiple randomly acquired characteristics. It was concluded that the Item K1 right shoe was the source of, and made, the Item Q2 and Q7 impressions. Another shoe being the source of the impression is considered a practical impossibility. Comparative analysis revealed significant differences (spacing of tread elements, stippling) between the Item Q3 and Q4 impressions and the Item K1 left shoe. It was concluded that the Item K1 left shoe did not make the Item Q3 and Q4 impressions. Comparative analysis revealed significant differences (spacing of tread elements, stippling) between the Item Q5 and Q6 impressions and the Item K1 right shoe. It was concluded that the Item K1 right shoe did not make the Item Q5 and Q6 impressions. Comparative analysis revealed significant differences (left vs right) between the Item Q2, Q5, Q6 and Q7 impressions and the Item K1 left shoe. It was concluded that the Item K1 left shoe did not make the Item Q2, Q5, Q6 and Q7 impressions. Comparative analysis revealed significant differences (left vs right) between the Item Q1, Q3 and Q4 impressions and the Item K1 right shoe. It was concluded that the Item K1 right shoe did not make the Item Q1, Q3 and Q4 impressions.
YGVZRJ-5335	[No Conclusions Reported.]
YJK34Y-5331	Q1 2 Hypotheses: H1: The left shoe made impression Q1. H0: Another shoe made impression Q1. In my opinion, $P(E H1)$ = Very high (Correspondence of pattern, dimensions, manufacturing characteristics and unique RACs in terms of location, dimensions and orientation). $P(E H0)$ = Negligible (Good print clarity, unique sole patten and majority of the shoe sole patterns are rare; Presence of unique RACs). In my opinion, the findings give extremely strong support that the given left shoe made the impression Q1. Q2 2 Hypotheses: H1: The right shoe made impression Q2. H0: Another shoe made impression Q2. In my opinion, $P(E H1)$ = Very high (Correspondence of pattern, dimensions, manufacturing characteristics and unique RACs in terms of location, dimensions and orientation). $P(E H0)$ = Negligible (Good print clarity, unique sole patten and majority of the shoe sole patterns are rare; Presence of unique RACs). In my opinion, the findings give extremely strong support that the given right shoe made the impression Q2. Q3 Left shoe has correspondence of pattern to impression Q3. However, there were lack of correspondence of dimensions, manufacturing features and RACs. In my opinion, the left shoe did not make impression Q3. Q4 Left shoe has correspondence of pattern to impression Q4. However, there were lack of correspondence of dimensions, manufacturing features, wear features and RACs. In my opinion, the left shoe did not make impression Q4. Q5 Right shoe has correspondence of pattern to impression Q5. However, there were lack of correspondence of dimensions, manufacturing features and RACs. In my opinion, the right shoe did not make impression Q5. Q6 Right shoe has correspondence of pattern to impression Q6. However, there were lack of correspondence of dimensions, manufacturing features and RACs. In my opinion, the right shoe did not make impression Q6. Q7 2 Hypotheses: H1: The right shoe made impression Q7. H0: Another shoe made impression Q7. In my opinion, $P(E H1)$ = Very high (Correspondence of pattern, dimensions, manufacturing characteristics and unique RACs in terms of location, dimensions and orientation). $P(E H0)$ = Negligible (Good print clarity, unique sole patten and majority of the shoe sole patterns are rare; Presence of unique RACs). In my opinion, the

TABLE 2

WebCode-Test	Conclusions
	findings give extremely strong support that the given right shoe made the impression Q7.
YTQ64Q-5331	[No Conclusions Reported.]
YULM7R-5331	Photograph of questioned impressions on sandpaper (Items Q1-Q3): This photograph depicts a total of three questioned footwear impressions. One of the questioned impressions (Q1) is a nearly complete left footwear impression and is similar in size, shape, and tread design to the suspect's left sneaker (01-04). In addition, there is at least one randomly acquired characteristic visible in the questioned impression and on the outsole of this sneaker. It is my opinion that this questioned impression was made by the suspect's left sneaker (Category 1). Another of the questioned impressions (Q2) is a partial right footwear impression and is similar in size, shape, and tread design to a portion of the suspect's right sneaker (01-04). In addition, there is at least one randomly acquired characteristic visible in the questioned impression and on the outsole of this sneaker. It is my opinion that this questioned impression was made by the suspect's right sneaker (Category 1). The remaining questioned impression (Q3) is a partial left footwear impression and is similar in tread design, but different in size from the suspect's left sneaker (01-04). It is my opinion that this questioned impression was not made by the suspect's left sneaker (Category 5). No further analysis was performed. Photograph of questioned impressions on ceramic tiles (Items Q4-Q5): This photograph depicts a total of two questioned footwear impressions. The questioned impressions (Q4 and Q5) are nearly complete left and right footwear impressions, respectively. These questioned impressions are similar in tread design, but different in size from the suspect's left and right sneakers (01-04). It is my opinion that these questioned impressions were not made by either of the suspect's sneakers (Category 5). No further analysis was performed. Photograph of questioned impressions on cardboard (Items Q6-Q7): This photograph depicts a total of two questioned footwear impressions. One of the questioned impressions (Q6) is a nearly complete right footwear impression and is similar in tread design, but different in size from the suspect's right sneaker (01-04). It is my opinion that this questioned impression was not made by the suspect's right sneaker (Category 5). The other questioned impression (Q7) is a nearly complete right footwear impression and is similar in size, shape, and tread design to the suspect's right sneaker (01-04). In addition, there is at least one randomly acquired characteristic visible in the questioned impression and on the outsole of this sneaker. It is my opinion that this questioned impression was made by the suspect's right sneaker (Category 1). No further analysis was performed. Photographs of the suspect's sneakers (Items K1a-K1g): This item was used for comparison purposes.
YX7EGU-5331	Exhibit 4.1 (Impression Q1) was identified as having been made by the submitted left shoe, K1 Left. Exhibits 4.2 and 6.2 (Impressions Q2 and Q7) were identified as having been made by the submitted right shoe, K1 Right. Exhibits 5.2 and 6.1 (Impressions Q5 and Q6) were not made by the submitted right shoe, K1 Right. Exhibits 5.2 and 6.1 were made by a second right shoe. Suspect shoes include New Balance shoes with a similar outsole design to the suspect shoe. Exhibits 4.3 and 5.1 (Impressions Q3 and Q4) were not made by the submitted left shoe, K1 Left. Exhibits 4.3 and 5.1 could have been made by the same left shoe or by two shoes whose outsoles were made in the same mold. Suspect shoes include New Balance shoes with a similar outsole design to the suspect shoe.
Z3CHWU-5335	The imprints (Q1, Q2 and Q7) were made by the suspect shoes. The individual features are present in sufficient quantity and quality. The remaining four imprints (Q3, Q4, Q5, Q6) were made by shoes for which photographs were not provided.
ZPQ3TV-5335	THE QUESTIONED PRINT, REFERRED TO AS Q1, HAS BEEN MADE OF THE LEFT FOOT OF THE FOOTWEAR STUDIED. THE QUESTIONED PRINTS, REFERRED TO AS Q2 AND Q7, HAVE BEEN MADE OF THE RIGHT FOOT OF THE FOOTWEAR STUDIED. THE QUESTIONED PRINTS, REFERRED TO AS Q3, Q4, Q5 AND Q7, HAVEN'T BEEN MADE OF THE FOOTWEAR STUDIED.
ZQHEEM-5335	In the opinion of this examiner, the known Left footwear, is the source of, and made, the questioned impression of Q1. Another item of footwear being the source of this impression is considered a practical impossibility. In the opinion of this examiner, the known Right footwear, is the source of, and made, the questioned impressions of Q2 and Q7. Another item of footwear being the source of these impressions is considered a practical impossibility. In the opinion of this examiner, the known footwear, is not the source

TABLE 2

WebCode-Test	Conclusions
	of, and did not make the questioned impressions of Q3, Q4, Q5, and Q6.
ZYRPLR-5335	The comparison between the unknown footwear impressions, Item 3 (Q3), Item 4 (Q4), Item 5 (Q5) and Item 6 (Q6), and the exemplar left and right shoes, Items 8-14, revealed dissimilar class characteristics. The class characteristics found to be dissimilar include physical shape and or size. The exemplar left and right shoes, depicted in Items 8-14, are excluded as the source of the unknown footwear impressions in Items 3-6 (Q3-Q6). The comparison between the unknown footwear impressions, Item 2 (Q2) and Item 7 (Q7) and the exemplar right shoe, Items 8-14, revealed corresponding class and randomly acquired characteristics. The class characteristics found to be in correspondence include physical shape, size and tread design. The randomly acquired characteristics found to be in correspondence include various gouges, wear (schallamach patterns) and or abrasions. The exemplar right shoe, depicted in Items 8-14, is the source of the unknown footwear impressions in Item 2 (Q2) and Item 7 (Q7). The comparison between the unknown footwear impression, Item 1 (Q1) and the exemplar left shoe, Items 8-14, revealed corresponding class and randomly acquired characteristics. The class characteristics found to be in correspondence include physical shape, size and tread design. The randomly acquired characteristics found to be in correspondence include various gouges, wear (schallamach patterns) and or abrasions. The exemplar left shoe, depicted in Items 8-14, is the source of the unknown footwear impression in Item 1 (Q1).

Additional Comments

TABLE 3

WebCode-Test	Additional Comments
4Q6XMP-5335	Q7 was primarily identified through the Schamallach features located at the front of the sole.
7AVQME-5335	It would be valuable to have pictures on the shoe soles before they were inked, it was difficult to see the damages in the soles due to the ink. Some of the questioned imprints were blurry when zoomed in which made it difficult to see details and lines.
8Z6KCR-5335	The seven shoe impressions from the test all shared similar class characteristics such as dimension and pattern to the recovered shoes. Question impressions Q1 & Q2 also share randomly acquired characteristics giving me the opinion that they were deposited by the recovered shoes.
DV8WD8-5331	It would be helpful if PT providers include the lifting methods used for tool wear imprints, as this could support consistency in analysis, improve interpretation of results, and aid comparison between examinations.
E2RE89-5331	[Laboratory] do not assign our SWGTREAD to our results, our footwear Team are not experts so have assigned either A or G grade.
E6RQ39-5335	My comparison was somewhat limited as there were features in the test prints that I could not verify on the shoe photos. I could not tell if they were damage or something else e.g. air bubbles, mould features as when you zoomed into the photos they became too pixelated to see enough detail. It may also help to do more extreme oblique lighting on the shoes if the damage features are very fine ones.
FFNFWF-5331	Due to the fact that the shoe is unavailable, no further test prints can be carried out and confirmation of suspected damage features can not be made. As a result the strength of evidence is limited to strong support. Some of the results may have been conclusive if the shoe had been available.
HAWJUA-5335	Identification – This is the highest degree of association expressed by a footwear impression examiner. The questioned impression and the known footwear share agreement of class and randomly acquired characteristics of sufficient quality and quantity. Exclusion – This is the highest degree of non-association expressed in footwear impression examinations. Sufficient differences were noted in the comparison of class and/or randomly acquired characteristics between the questioned impression and the known footwear.
HPMPGA-5335	We do not use grad A in our report, therefore we have not considered using it in this test either to better relate to our own reports. Based on the wording in your conclusion scale, the criterias for exclusion include that the questioned and known items exhibit sufficient differences of class and/or randomly acquired characteristics. Our understanding is as follows: for Q3-Q6 the questioned and known items exhibit similar design, but differences in physical size. Therefore scale F is used. Our understanding is as follows; if there were sufficient differences of class and/or randomly acquired characteristics, scale G would be applicable.
KY4798-5335	When will CTS move to the new range of conclusion that were published by the OSAC Footwear sub-committee. [Laboratory] is a self-adopting agency of all OSAC applicable standards and this standard (OSAC 2023-S-0017 Standard for the Articulation of Footwear and Tire Interpretations) has already been added to the registry.
M7F6QB-5335	Q7. I placed the right shoe as B: High degree of association. I could have put it at A: Identification but there is nil information relating to the randomness of the textured tread at the heel. For the above conclusion reports I would also write conclusions on each exclusion based on the scene impression coming from a left or right shoe, and the exhibit being the opposite.

TABLE 3

WebCode-Test	Additional Comments
MRXYXW-5331	I have grouped the marks together for the conclusion, but on your previous page have done the marks individually which is why Q2 is B and Q1 and Q7 are A.
Q9W9DY-5331	Note: Extremely strong support is the highest point on our scale. We do not use identification.
TM7X6W-5331	Quality of the photographs of the known shoe soles was sometimes insufficient to accurately determine if marks exhibited in the questioned shoe prints were due to individual characteristics of the shoes. Some of the defects were not able to be observed in the photos of the soles, though evidence of defects were observed in test prints. Would suggest higher quality photos and/or photos of enlarged areas of the soles.
X7FTFP-5335	In accordance with [Organization] standard operating procedures, a detailed footwear marks examination requires the submission of the actual items of footwear so that any correspondence or differences observed, particularly in relation to randomly acquired characteristics, can be directly correlated to and verified with the items of footwear.
XEZM2M-5335	Additional shoes may be submitted for comparison if desired. The association scale for footwear impressions would be included in the report.
XPXNER-5331	Notes: The partial, questioned footwear impression of value, Q3, has a notable physical size difference and different stippling pattern from the known left shoe in Submission 001. The partial, questioned footwear impression of value, Q4, has a physical size difference from the known left shoe in Submission 001. The partial, questioned footwear impressions of value, Q5 and Q6, both have a physical size difference from the known right shoe in Submission 001. Furthermore, both of these impressions have a prominent cut across two (2) elements in the ball portion of the impression that is not on the known outsoles nor test impressions.

-End of Report-
(Appendix may follow)

Test No. 26-5331: Footwear Imprint Evidence

DATA MUST BE SUBMITTED BY **June 08, 2026, 11:59 p.m. EDT** TO BE INCLUDED IN THE REPORT

Participant Code: U1234A

WebCode: F2996N

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

Scenario:

Investigators are requesting the comparison of imprints recovered at a crime scene with a pair of recently cleaned shoes recovered one day after the incident. They have provided known test impressions and photographs of the shoe soles. The recovered shoes are manufactured by New Balance, and the shoe tag reads: WL515NAB, US W 7.5, US M 6, UK 5.5, EUR 38, CM 24.5, MFG: 05/2025.

Shoes and known imprints have been labeled with 'L' and 'R' to indicate 'Left' and 'Right' shoes. The inked imprints in images K1d and K1e were made by rolling the toe and heel areas separately onto paper. The inked imprints in images K1f and K1g were made by having the owner wear the shoes and step down onto paper placed on top of a semi-soft surface (per ASB best practices).

Items Submitted (Sample Pack FIEP - Photographs):

Item K1a: Photograph of the soles of the recovered shoes, lighted from above.

Items K1b-K1c: Two oblique lighted images of the soles of the recovered shoes, light direction indicated by arrows.

Items K1d-K1g: Known imprints made with the recovered shoes.

Items Q1-Q3: Questioned imprints found on sandpaper.

Items Q4-Q5: Questioned imprints found on ceramic tiles.

Items Q6-Q7: Questioned imprints found on cardboard.

Instructions:

Select from the following list of conclusions and insert the appropriate letter in the spaces provided. If the wording below differs from the normal wording of your conclusions, adapt these conclusions as best you can and use your preferred wording in your written conclusions. These conclusions are adapted from the SWGTREAD Range of Conclusions standard.

A. Identification - Questioned and known items share agreement of class and randomly acquired characteristics of sufficient quality and quantity. Highest degree of association.

B. High degree of association - Correspondence of class characteristics, in addition to unusual wear and/or one or more randomly acquired characteristics between the questioned and known item.

C. Association of class characteristics - Correspondence of design and physical size and possibly general wear between the questioned and known item.

D. Limited association of class characteristics - Some similar class characteristics between the questioned and known item with significant limiting factors.

E. Inconclusive* - Questioned item lacks sufficient detail for a meaningful conclusion in comparison to the known item. (adapted from SWGTREAD "Lacks sufficient detail" conclusion).

F. Indications of non-association - Questioned item exhibits dissimilarities in comparison to the known item.

G. Exclusion - Questioned and known items exhibit sufficient differences of class and/or randomly acquired characteristics. Highest degree of non-association.

*Should the response "E" be used, please document the reason in the Additional Comments section of this data sheet.

1.) Indicate the results of your comparisons of the recovered shoes with the questioned imprints by writing the letter of your conclusion next to each questioned imprint in the table.

If an identification or positive association is made (A-D), indicate whether the imprint is associated with the right or left suspect shoe. If a non-association or inconclusive finding is reported (E-G), do NOT indicate a right or left shoe.

Sandpaper		
<u>Imprint</u>		<u>L/R</u>
Q1:		
Q2:		
Q3:		

Ceramic tiles		
<u>Imprint</u>		<u>L/R</u>
Q4:		
Q5:		

Cardboard		
<u>Imprint</u>		<u>L/R</u>
Q6:		
Q7:		

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

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

3.) Additional Comments

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

RELEASE OF DATA TO ACCREDITATION BODIES

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

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

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

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

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

ANAB Certificate No.

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

Authorized Contact Person and Title

Laboratory Name

Location (City/State)