



## **Firearms Examination**

# **Test No. 21-5262 Summary Report**

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Each sample set consisted of three known expended bullets test-fired from a suspect weapon (Item 1) and four questioned expended bullets (Items 2-5). Participants were requested to examine these items and report their findings. Data were returned from 269 participants and are compiled into the following tables:

	<u>Page</u>
<a href="#"><u>Manufacturer's Information</u></a>	<a href="#"><u>2</u></a>
<a href="#"><u>Summary Comments</u></a>	<a href="#"><u>3</u></a>
<a href="#"><u>Table 1: Examination Results</u></a>	<a href="#"><u>4</u></a>
<a href="#"><u>Table 2: Conclusions</u></a>	<a href="#"><u>10</u></a>
<a href="#"><u>Table 3: Additional Comments</u></a>	<a href="#"><u>51</u></a>
<a href="#"><u>Appendix: Data Sheet</u></a>	

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

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

## **Manufacturer's Information**

Each sample set contained five items: Item 1 consisted of three bullets fired in the suspect's firearm. Items 2, 3, 4, and 5 each consisted of one bullet recovered from the scene. PMC® Bronze 40 Auto 180 grain Full Metal Jacket (FMJ) was used for all five items. Participants were requested to determine which, if any, of the recovered questioned bullets (Items 2-5) were fired from the same firearm as the known bullets (Item 1).

The bullets in Items 1 and 3 were fired in a Springfield XD-40 (Serial Number US248571). Items 2, 4, and 5 were fired in a Taurus Millennium PT140 Pro (Serial Number SEW24658).

ITEMS 1 and 3 (IDENTIFICATION): Multiple magazines were loaded with PMC® Bronze 40 ammunition for firing with the Springfield XD-40 handgun. After the ammunition was expended, the bullets were collected and packaged together as a batch. This process was repeated until the required number was produced. Out of each batch, the necessary number of bullets was selected and inscribed with a "1" (three bullets) or "3" (one bullet) and then sealed into their respective boxes.

ITEM 2, 4, 5 (ELIMINATION): Multiple magazines were loaded with PMC® Bronze 40 ammunition for firing with the Taurus Millennium PT140 Pro handgun. After the ammunition was expended, the bullets were collected. This process was repeated until the required number was produced. Out of each batch, the necessary number of bullets was selected and inscribed with a "2" (one bullet), "4" (one bullet), or "5" (one bullet) and then sealed into their respective boxes.

SAMPLE SET ASSEMBLY: For each sample set, elimination Items 2, 4, and 5 along with Items 1 and 3 of the same association batch were placed in a sample pack box. This process was repeated until all of the sample sets were prepared. Once verification was completed, the sample packs were sealed with evidence tape and initialed "CTS."

VERIFICATION: During test production, 10% of the bullets from each batch were selected and intercompared to confirm that markings were consistent. All three predistribution laboratories reported the expected responses.

## **Summary Comments**

This test was designed to allow participants to assess their proficiency in a comparison of expended bullets. Participants were provided with four questioned expended PMC® Bronze 40 Auto 180 grain Full Metal Jacket (FMJ) bullets (Items 2, 3, 4, and 5). They were requested to compare these with three known expended bullets (Item 1) that were fired in the suspect's weapon, a Springfield XD-40 handgun. For each sample set, the Item 3 bullet was fired in the same firearm as the Item 1 known bullets (Refer to Manufacturer's Information for preparation details).

### Table 1 Examination Results:

Of the 269 responding participants, 254 (94%) identified Item 3 and either eliminated Items 2, 4, and 5 as having been fired from the same firearm as the Item 1 bullets or reported "Inconclusive." Seven participants identified all questioned items and four participants eliminated all items or reported "Inconclusive" for all items as it relates to whether they were fired from the same firearm as the known bullets. Three participants identified Item 3, but did not provide any conclusions for Items 2, 4, and 5. The remaining participant did not provide examination results for any of the items.

CTS is aware that many labs will not, as a matter of policy, report an elimination without access to the firearm or when class characteristics match. Thus, responses of "Inconclusive" are not indicated as outliers for Elimination items.

# Examination Results

Were any of the recovered questioned bullets (Items 2-5) fired in the same firearm as the known bullets (Item 1)?

TABLE 1

WebCode	Item 2	Item 3	Item 4	Item 5	WebCode	Item 2	Item 3	Item 4	Item 5
244WKD	No	Yes	No	No	4XMBNC	No	Yes	No	No
2JW32Z	Yes	Yes	Yes	Yes	4YZDLP	No	Yes	No	No
2MX9EK	No	Yes	No	No	649N6Q	No	Yes	No	No
2VPJTM	Inc	Yes	Inc	Inc	6DV9FV	No	Yes	No	No
2ZHVEB	No	Yes	No	No	6EAJ99	No	Yes	No	No
37LLFB	No	Yes	No	No	6GVGMQ	No	Yes	No	No
3G8483	No	Yes	No	No	6HTRHT	No	Yes	No	No
3KMM7B	No	Yes	No	No	6KFD4P	Inc	Inc	Inc	Inc
3PCBM3	No	Yes	No	No	6M88A7	No	Yes	No	No
3QC6JM	Inc	Yes	Inc	Inc	6MMN6Y	No	Yes	No	No
3YKRCM	No	Yes	No	No	6RU4QG	No	Yes	No	No
3YN8VF	No	Yes	No	No	6TCHBR	Inc	Inc	Inc	Inc
43XWL3	Inc	Yes	Inc	Inc	6ZAXR4	No	Yes	No	No
48V7ZB	No	Yes	No	No	6ZRTA7	Inc	Yes	Inc	Inc
4DGBMJ	No	Yes	No	No	74L6LG	No	Yes	No	No
4DJY7H	No	Yes	No	No	762MM2	No	Yes	No	No
4FKQQN	No	Yes	No	No	76FVRV	Yes	Yes	Yes	Yes
4JL8BP	No	Yes	No	No	7D8BEE	No	Yes	No	No
4PC8FR	No	Yes	No	No	7GCA49	No	Yes	No	No
4RH373	Inc	Yes	Inc	Inc	7KE8FM	Inc	Yes	Inc	Inc
4U7GUD	No	Yes	No	No	7QGRN6	No	Yes	No	No
4ULXP7	Inc	Yes	Inc	Inc	7TN7UB	No	Yes	No	No
4UNVFN	No	Yes	No	No	7WQXCN	No	Yes	No	No
4WGAXR	No	Yes	No	No	7Z98EU	No	Yes	No	No

TABLE 1

WebCode	Item 2	Item 3	Item 4	Item 5	WebCode	Item 2	Item 3	Item 4	Item 5
7ZQA8N	No	Yes	No	No	AF4LUK	No	Yes	No	No
83QE6N	No	Yes	No	No	AG32DP	No	Yes	No	No
84Y2PZ	No	Yes	No	No	AKFE86				
8DNPMN	No	Yes	No	No	APRGTZ	No	Yes	No	No
8EGHH8	Inc	Yes	Inc	Inc	AV22AY	No	Yes	No	No
8GBGHR	No	Yes	No	No	AYWYDW	No	Yes	No	No
8LKMAR	No	Yes	No	No	B48Y3F	Inc	Yes	Inc	Inc
8P4UF7	No	Yes	No	No	BUPN8N	No	Yes	No	No
8PXM7H	No	Yes	No	No	BYE83Q	Yes	Yes	Yes	Yes
8Y9QDG	No	Yes	No	No	BZLMBH	No	Yes	No	No
973DJ8	No	Yes	No	No	C9EP4Z	No	Yes	No	No
977QDV	No	Yes	No	No	CADVMF	No	Yes	No	No
9BE2K4	No	Yes	No	No	CJWWQ9	No	Yes	No	No
9GN7K4	No	Yes	No	No	CJX2JJ	No	Yes	No	No
9LXQ6V	No	Yes	No	No	CK9GXX	No	Yes	No	No
9NKK96	No	Yes	No	No	CRUWGH	No	Yes	No	No
9QTDZ4	No	Yes	No	No	CTMKLC	No	Yes	No	No
9THRHM	No	Yes	No	No	CXH6WM	No	Yes	No	No
9UQGT6		Yes			D7LNMW	No	Yes	No	No
9XRUKH		Yes			D8WTZK	No	Yes	No	No
9Y3W8G	No	Yes	No	No	DGPUQW	No	Yes	No	No
A28WTY	No	Yes	No	No	DNQNC	Inc	Yes	Inc	Inc
A7HUGL	Inc	Yes	No	No	DUDDAM	Inc	Yes	Inc	Inc
A8AQ4U	No	Yes	No	No	DZ3T2E	Inc	Yes	Inc	Inc
ACMLR6	No	Yes	No	No	DZ4MHZ	No	Yes	No	No
AD4PHP	No	Yes	No	No	E2PLV2	No	Yes	No	No

TABLE 1

WebCode	Item 2	Item 3	Item 4	Item 5	WebCode	Item 2	Item 3	Item 4	Item 5
EBJKVM	No	Yes	No	No	GZV9UU	No	Yes	No	No
EF97DA	No	Yes	No	No	HL9FLE	No	Yes	No	No
EKMKMA	Inc	Yes	Inc	Inc	HMFZ8T	No	Yes	No	No
EPHEHP	No	Yes	No	No	HQEQKE	No	Yes	No	No
EV4LLF	No	Yes	No	No	HVW8AR	No	Yes	No	No
EWDC8D	No	Yes	No	No	HX3YZJ	No	Yes	No	No
EWJF2	No	Yes	No	No	HYWH7R	No	Yes	No	No
F3JKVL	No	Yes	No	No	J9C3DT	No	Yes	No	No
FBQT7E	No	Yes	No	No	JFGPFU	Inc	Yes	Inc	Inc
FCLRPZ	No	Yes	No	No	JJET9V	No	Yes	No	No
FCMKKL	No	Yes	No	No	JQUYTL	Inc	Yes	Inc	Inc
FKK8KY	No	Yes	No	No	JRQ9AH	No	Yes	No	No
FNEDTA	No	Yes	No	No	JUVDTR	No	Yes	No	No
FQ78TY	No	Yes	No	No	JXBDYD	No	Yes	No	No
FUPCBU	Inc	Yes	Inc	Inc	JXFQNU	No	Yes	No	No
FVMHWW	No	Yes	No	No	K77NUU	No	Yes	No	No
G7XH2M	No	Yes	No	No	K8FM4G	Yes	Yes	Yes	Yes
GGYZFW	No	Yes	No	No	KDLFVR	No	Yes	No	No
GH9WYF	No	Yes	No	No	KEY4FR	No	Yes	No	No
GHARHL	Yes	Yes	Yes	Yes	KFAKGQ	No	Yes	No	No
GPBWJH	No	Yes	No	No	KJRAR9	No	Yes	No	No
GQK79U	No	Yes	No	No	KLXMGM	No	Yes	No	No
GRYH6D	No	Yes	No	No	KMQJ3A	No	Yes	No	No
GT9HAK	No	Yes	No	No	KPD8FV	No	Yes	No	No
GTRX9G	Inc	Yes	Inc	Inc	KR3AN6	No	Yes	No	No
GU6Z8F	No	Yes	No	No	KWX3JK	No	Yes	No	No

TABLE 1

WebCode	Item 2	Item 3	Item 4	Item 5	WebCode	Item 2	Item 3	Item 4	Item 5
KZWG7A	No	Yes	No	No	PD8LJ8	No	Yes	No	No
KZY7B8	No	Yes	No	No	PK8Z69	Yes	Yes	Yes	Yes
L4AJNZ	No	Yes	No	No	PMF7QA	No	Yes	No	No
LCPH3B	No	Yes	No	No	PPHJG3	No	Yes	No	No
LKXUDM	No	Yes	No	No	PRA3DF	No	Yes	No	No
LNZVF6	No	Yes	No	No	PVPMCN	No	Yes	No	No
M7WHHN	No	Yes	No	No	PY8WBD	Inc	Yes	Inc	Inc
MDYKTF	No	Yes	No	No	PYVTL	No	Yes	No	No
MHAA2B	No	Yes	No	No	Q2QDV7	No	Yes	No	No
MKUR39	No	Yes	No	No	QJ8J6G	No	Yes	No	No
MLMBX3	No	Yes	No	No	QRM4Q2	No	Yes	No	No
MRV7LP	No	Yes	No	No	QVHUVR	No	Yes	No	No
MU644D	No	Yes	No	No	QZV62N	No	Yes	No	No
MZ788P	No	Yes	No	No	RC3ZKW	No	Yes	No	No
N6YKTE	No	Yes	No	No	REFECC	No	Yes	No	No
NCXEGE	Yes	Yes	Yes	Yes	RMKMRC	No	Yes	No	No
NEJZ92	No	Yes	No	No	RYLLK	No	Yes	No	No
NKPU4X	No	Yes	No	No	TBB7K8	No	Yes	No	No
NL4N27	No	Yes	No	No	TCLBUP	No	Yes	No	No
NP46K8	Inc	Yes	Inc	Inc	TDHEVD	No	Yes	No	No
NRCLEW	No	Yes	No	No	TETWZX	No	Yes	No	No
NT3H7C	No	Yes	No	No	TJ2RNK	No	Yes	No	No
NUXWJB	No	Yes	No	No	TKCTBJ	No	Yes	No	No
P3N7F6	No	Yes	No	No	TRD2ZK	No	Yes	No	No
P3P2YB	No	Yes	No	No	TUJWQW	No	Yes	No	No
P9V3D7	No	Yes	No	No	TULQ8H	No	Yes	No	No

TABLE 1

WebCode	Item 2	Item 3	Item 4	Item 5	WebCode	Item 2	Item 3	Item 4	Item 5
TVCEJ3	No	Yes	No	No	WQ8U39	No	Yes	No	No
TWQNR4	No	Yes	No	No	WR66YB	No	Yes	No	No
U2FNJ4	No	Yes	No	No	WWYW9T	No	Yes	No	No
U7AMUT	No	Yes	No	No	WZ2TZA	No	Yes	No	No
UCKZTZ	No	Yes	No	No	X4BF2R	Inc	Inc	Inc	Inc
UJC9X4	No	Yes	No	No	X4D6AV	No	Yes	No	No
UKFNJG	No	Yes	No	No	X7G3GG	Inc	Yes	Inc	Inc
ULMH43	Inc	Yes	Inc	Inc	X7ZW4D	No	Yes	No	No
UMGUW2	No	Yes	No	No	X976NQ	No	Yes	No	No
URABEG	No	Yes	No	No	X9NA64	No	Yes	No	No
UU3YYX	Inc	Yes	Inc	Inc	XAKR3Y	No	Yes	No	No
UXFCN4	No	Yes	No	No	XDZ7NJ		Yes		
V6X8ZR	No	Yes	No	No	XFQHBW	No	Yes	No	No
VDMKRJ	No	Yes	No	No	XJLC7C	No	Yes	No	No
VK9D76	No	Yes	No	No	XNJQU2	No	Yes	No	No
VT3WRK	No	Yes	No	No	XNX839	No	Yes	No	No
VWFVLQ	No	Yes	No	No	XPTDCV	No	Yes	No	No
VYQREB	No	Yes	No	No	XR2ZW8	No	Yes	No	No
W37J64	No	Yes	No	No	XRYBRB	No	Yes	No	No
W7K44C	Inc	Yes	Inc	Inc	XTRN9V	No	Yes	No	No
W82BBE	No	Yes	No	No	XU4TWX	No	Yes	No	No
W993B3	No	Yes	No	No	XU6Q4M	No	Yes	No	No
WDN8WV	No	Yes	No	No	XYHDXR	No	Yes	No	No
WFBNAA	Inc	Yes	Inc	Inc	Y276PN	No	Yes	No	No
WG2F9G	No	No	No	No	Y6GKRK	No	Yes	No	No
WGNA47	No	Yes	No	No	YMMMRE	No	Yes	No	No

TABLE 1

WebCode	Item 2	Item 3	Item 4	Item 5	WebCode	Item 2	Item 3	Item 4	Item 5
YRV34N	No	Yes	No	No					
YRYZPZ	Inc	Yes	Inc	Inc					
YW72VG	Inc	Yes	Inc	Inc					
Z2VK6X	No	Yes	No	No					
Z4L2QJ	No	Yes	No	No					
Z6FVBU	No	Yes	No	No					
ZBMBWC	No	Yes	No	No					
ZE4NPC	No	Yes	No	No					
ZL36AQ	No	Yes	No	No					
ZTJ2R7	Inc	Yes	Inc	Inc					
ZW2NHR	No	Yes	No	No					
ZWNU3R	Inc	Yes	Inc	Inc					
ZZNQKC	No	Yes	No	No					

## Response Summary

Participants: 269

Were any of the recovered questioned bullets (Items 2-5) fired in the same firearm as the known bullets (Item 1)?

Responses		Item 2	Item 3	Item 4	Item 5
	Yes		<b>7 (2.6%)</b>	<b>264 (98.1%)</b>	<b>7 (2.6%)</b>
No		<b>226 (84.0%)</b>	<b>1 (0.4%)</b>	<b>227 (84.4%)</b>	<b>227 (84.4%)</b>
Inc		<b>32 (11.9%)</b>	<b>3 (1.1%)</b>	<b>31 (11.5%)</b>	<b>31 (11.5%)</b>

# Conclusions

TABLE 2

WebCode	Conclusions
244WKD	Item 3 was fired in the same firearm as Item 1 (designated as test fires from a Springfield pistol, model XD-40, caliber .40 S&W) based on corresponding discernible class and individual characteristics (identification). Items 2, 4, and 5 were not fired in the same firearm as Item 1 (designated as test fires from a Springfield pistol, model XD-40, caliber .40 S&W) based on different individual characteristics (elimination). Items 2, 4, and 5 were fired through the barrel of the same unknown firearm based on corresponding discernible class and individual characteristics (identification).
2JW32Z	My conclusions is: all bullets in item 1, item 2, item 3, item 4 and item 5 is 40 auto calibre.
2MX9EK	Visual and microscopic analyses of the above evidence were performed starting December 16, 2021, and the results of the comparisons and evaluations are as follows: Based on agreement of discernible class characteristics and sufficient agreement of individual characteristics, the QB2 bullet was identified as having been fired with the same firearm as the K1 bullets. Based on agreement of discernible class characteristics and sufficient agreement of individual characteristics, the QB1, QB3, and QB4 bullets were identified as having been fired with the same unknown firearm. The K1 bullets and QB1 through QB4 exhibit the same class characteristics; however, based on significant disagreement of individual characteristics, QB1, QB3, and QB4 were eliminated as having been fired with the same firearm as QB2 and the K1 bullets. Should any other suspect firearms be recovered, please submit and reference the above CC #. SUFFICIENT AGREEMENT - "Sufficient agreement" exists between two toolmarks means that the agreement is of a quantity and quality that the likelihood another tool could have made the mark is so remote as to be considered a practical impossibility. Sufficient agreement is related to the significant duplication of random toolmarks as evidenced by a pattern or combination of patterns of surface contours.
2VPJTM	Items 3 and 1 (test fired bullets) were microscopically examined and compared. Based on observed agreement of class characteristics and sufficient agreement of individual characteristics, Item 1 was identified as having been fired from the same firearm that fired Item 1 (Springfield XD-40 handgun). Items 2, 4, and 5 were microscopically examined and compared. Based on observed agreement of class characteristics and sufficient agreement of individual characteristics, the bullets were identified as having been fired from the same firearm. Items 2, 4, 5 were microscopically examined and compared to Item 1 (test fired bullets). Agreement of class characteristics was observed. However, there is insufficient agreement or disagreement of individual characteristics to either identify or eliminate the bullets as having been fired from the same firearm that fired Item 1 (Springfield XD-40 handgun). Items 2, 4, and 5 have physical and design characteristics consistent with being .40/10mm caliber. A list of firearms that could have fired them is too large for inclusion in this report, but can be provided upon request.
2ZHVEB	Items 2, 3, 4, and 5: A microscopic comparison was conducted between Test bullet A, Item 1 that was fired from the recovered firearm and Items 2, 3, 4, and 5. The examinations determined that Item 3 was fired from the recovered firearm, Item 1, due to a sufficient agreement between striations. The examinations determined that Items 2, 4, and 5 were not fired from the recovered firearm, Item 1, due to a disagreement of individual characteristics. A microscopic comparison was conducted between, Item 2, 4, and 5. The examinations determined that Items 2, 4, and 5 were fired from the same firearm due to a sufficient agreement between striations. Disposition: The above-listed evidence will be forwarded to the Property Custody Division. All firearm comparison examinations were conducted using the

TABLE 2

WebCode	Conclusions
	<p>AFTE's (Association of Firearm &amp; Tool Mark Examiners) Theory of Identification. Identifications are the opinion of a qualified examiner that two tool marks were made by the same tool based on sufficient agreement of individual characteristics. The agreement of individual characteristics is of a quantity and quality that the likelihood another (different) tool could have made the mark is so remote as to be considered a practical impossibility. All exclusions and inconclusive findings were based upon exemplars available at the time of the examinations.</p>
37LLFB	<p>The bullets in Item #1 were microscopically inter-compared and used for comparison purposes. The Item #2, 4 and 5 bullets were excluded as having been fired from the same firearm that fired the Item #1 bullets. The Item #3 bullet was identified as having been fired from the same firearm that fired the Item #1 bullets.</p>
3G8483	<p>1. Examination of Exhibit 1 disclosed it to be three fired .40 caliber copper jacketed bullets. The supplied documentation states that these items were test fired from the suspect's firearm. Two of the test fired bullets within Exhibit 1 were found to be suitable for microscopic comparison. 2. Examination of Exhibits 2 through 5 disclosed them to be four fired .40 caliber copper jacketed bullets, displaying six land and groove impressions with a right hand twist. 3. Exhibits 1 through 5 were visually and microscopically compared to one another. a. As a result of microscopic comparison, it was concluded that Exhibit 3 was identified as having been fired from the same firearm as Exhibit 1 due to an agreement of class characteristics and a sufficient agreement of individual characteristics. b. Exhibits 2, 4, and 5 were identified as having been fired from the same firearm due to an agreement of class characteristics and a sufficient agreement of individual characteristics; however, due to an agreement of class characteristics and a sufficient disagreement of individual characteristics, they were eliminated as having been fired from the same firearm as Exhibit 1. Observing this amount of disagreement from the same source is considered extremely remote.</p>
3KMM7B	<p>Using the Bayesian approach in casework we view our findings under two hypotheses. In this test we used the following hypotheses: H1: The questioned bullet is fired by the submitted firearm. H2: The questioned bullet is fired by another firearm of the same caliber and with the same class characteristics as the submitted firearm. The likelihood ratio (LR) of the findings is expressed in the following verbal scale: Approximately equally probable (LR = 1-2) - Slightly more probable (LR = 2-10) - More probable (LR = 10-100) - Much more probable (LR = 100-10,000) - Very much more probable (LR = 10,000-1,000,000) - Extremely more probable (LR = &gt;1,000,000). Conclusions: Item 2: The findings are at least very much more probable when H2 is true than when H1 is true. Item 3: The findings are extremely more probable when H1 is true than when H2 is true. Item 4: The findings are at least very much more probable when H2 is true than when H1 is true. Item 5: The findings are at least very much more probable when H2 is true than when H1 is true.</p>
3PCBM3	<p>1. Examination of Exhibit 1 revealed three (3) fired .40 caliber copper jacketed FMJ bullets test fired from the suspect's firearm. 2. Examination of Exhibits 2 through 5 revealed each contains one (1) fired .40 caliber copper jacketed FMJ bullet displaying six land and groove impression with a right hand twist. 3. Microscopic comparison revealed Exhibit 3 was fired from the same firearm as Exhibit 1 due to an agreement of class characteristics and sufficient agreement of individual characteristics. 4. Microscopic comparison revealed Exhibits 2, 4, and 5 were fired from the same firearm due to an agreement of class characteristics and sufficient agreement of individual characteristics. 5. Microscopic comparison revealed Exhibits 2, 4, and 5 were not fired from the same firearm as Exhibits 1 and 3 due to an agreement of class characteristics and sufficient disagreement of individual characteristics. Observing this amount of disagreement from the same source is considered extremely remote. TECHNICAL NOTES: Class characteristics are defined as measurable features of a firearm/tool which indicate a</p>

TABLE 2

WebCode	Conclusions
	<p>restricted group source. They result from design features and are determined prior to manufacture of the firearm/tool. Individual characteristics are defined as marks produced by the random imperfections or irregularities of firearm/tool surfaces. These random imperfections or irregularities are produced incidental to manufacture and/or caused by use, corrosion, or damage, and are unique to that specific tool. Any conclusions indicating that a toolmark was made by a specific firearm/tool are not to the absolute exclusion of all other firearms/tools because it is not feasible to examine all possible firearms/tools. However, observing this amount of agreement from a different source is considered extremely remote.</p>
3QC6JM	<p>Items 1 and 3 were determined to be 40 caliber bullets. Items 2, 4, and 5 were determined to be 40/10mm caliber bullets. Items 1 through 5 were determined to have been fired by a firearm(s) having conventional style rifling consisting of six lands and grooves with a right twist. They were all determined to be suitable for microscopic comparison. Based on agreement of all discernible class characteristics, items 2, 3, 4, and 5 bullets were microscopically compared to item 1. Item 3 was identified as having been fired by the same firearm that fired item 1 bullets, in the opinion of the laboratory. This identification conclusion was based on sufficient similarities in the patterns of microscopic markings observed between the compared items. Items 2, 4, and 5 could neither be identified nor eliminated as having been fired the same firearm that fired item 1 bullets, in the opinion of the laboratory. These inconclusive conclusions were based on insufficient similarities and insufficient differences in the patterns of microscopic markings observed among the compared items for conclusions of identification or elimination, respectively. Items 2, 4, and 5 were identified as having been fired by the same firearm, in the opinion of the laboratory. These identification conclusions were based on sufficient similarities in the patterns of microscopic markings observed among the compared items.</p>
3YKRCM	<p>The bullets identified above as Items 2, 3, 4, and 5 were microscopically compared to the test fired bullets contained in Item 1. The comparisons disclosed that Item 3 was fired by the same firearm that generated the test fired bullets contained in Item 1 based on agreement of all discernible class characteristics and agreement of individual detail. Items 2, 4, and 5 were excluded from having been fired by the same firearm that generated the test fired bullets contained in Item 1 based on a lack of individual detail agreement. Items 2, 4, and 5 were microscopically intercompared and determined to have been fired by the same unknown firearm based on agreement of all discernible class characteristics and agreement of individual detail.</p>
3YN8VF	<p>Examinations showed Item 3 was discharged from the same firearm as Item 1. Examinations showed Items 2, 4 and 5 were not discharged from the same firearm as Item 1.</p>
43XWL3	<p>Item 3 was compared microscopically to the test standards from the submitted Springfield XD-40 and identified as being discharged in the submitted firearm. Items 2, 4, and 5 were microscopically compared and identified as being fired from the same unknown firearm. Items 2, 4, and 5 were compared microscopically to Item 3 and the test standards from the submitted Springfield XD-40 with inconclusive results, although they share class characteristics there is a lack of agreement or disagreement of individual characteristics for a conclusive result.</p>
48V7ZB	<p>Item 1-3 was fired by the seized Springfield Armory XD-40 pistol that also provided the test firings: Item 1-1 (A,B &amp; C). Items 1-2, 1-4 &amp; 1-5 were all fired by the same unknown weapon capable of firing .40 S&amp;W caliber ammunition, but not the same weapon that fired Item 1-1 (A,B,C) and 1-3.</p>
4DGBMJ	<p>Visual and microscopic analyses of the evidence bullets and test fired bullets received from</p>

TABLE 2

WebCode	Conclusions
	suspect firearm K1 were performed, being initiated on December 17, 2021 with the results of the comparisons and evaluations as follow: Based on agreement of discernible class characteristics and sufficient agreement of individual characteristics, evidence bullet QB2 (Item 3) is identified as having been fired with the same firearm as the received test fired bullets from suspect firearm K1 (Item 1). Based on agreement of discernible class characteristics and sufficient agreement of individual characteristics, evidence bullets QB1 (Item 2), QB3 (Item 4), and QB4 (Item 5) are identified as having been fired with the same unknown firearm. These are eliminated as having been fired with the same firearm as test fired bullets from suspect firearm K1 due to disagreement of individual characteristics/markings. Should another suspected firearm be recovered please submit it in reference to the above CC#. SUFFICIENT AGREEMENT- Sufficient agreement” exists between two toolmarks means that the agreement is of a quantity and quality that the likelihood another tool could have made the mark is so remote as to be considered a practical impossibility. Sufficient agreement is related to the significant duplication of random toolmarks as evidence by a pattern or combination of patterns of surface contours.
4DJY7H	Item #3 was fired from item #1 (.40 caliber Springfield pistol) based on agreement of class characteristics and patterns of sufficient individual characteristics. Items #2, #4, and #5 were all fired from another firearm, different than item #1 and #3.
4FKQQN	The recovered bullets have been fired by two diferent arms. The known firearm (Sprinfield XD-40) has fired the Item 3. The rest of the unkown or questioned bullets (Item 2, 4 and 5) have been fired by the same firearm, diferent of the known firearm (Item 1).
4JL8BP	The reported recovered firearm that fired Item CTS 1 bullets also fired Item CTS 3 bullet reported to be recovered from the victim. The reported recovered firearm that fired Item CTS 1 and Item CTS 3 did not fire Items CTS 2, CTS 4, and CTS 5 bullets reported as having been recovered from the scene. Items CTS 2, CTS 4 and CTS 5 bullets were all fired by a second firearm. These bullets are most consistent with bullets commonly found loaded in some 40 S&W/10mm Auto caliber cartridges. See the attachment for a list of possible 40 S&W/10mm Auto caliber firearm manufacturers/origins that may have fired these bullets. Note that this list may not be all inclusive.
4PC8FR	Item 3 was identified as having been fired from the same firearm as Item 1. Items 2, 4 and 5 were identified as having been fired from the same # unknown firearm. They were not fired from the same firearm as Item 1.
4RH373	One of the fired bullets (1-03) was identified as having been fired from the same firearm as three of the fired bullets (1-01) due to consistent and repeatable marks. Three of the fired bullets (1-02, 1-04, and 1-05) were identified as having been fired from the same firearm due to consistent and repeatable marks; however, the three fired bullets were not identified or eliminated as having been fired from the same firearm as the other fired bullet (1-03) or the three fired bullets (1-01) due to agreement in available class characteristics but a lack of consistent and repeatable individual marks.
4U7GUD	Item 3 is identified as having been fired in the same firearm that fired item 1. Items 2, 4 and 5 are eliminated from having been fired in the firearm that fired items 1 and 3. Items 2, 4 and 5 are identified as having been fired in the same unknown firearm.
4ULXP7	The Items 01-01 and 01-03 copper jacketed bullets were identified as having been fired from the same firearm, which is reportedly a 40 caliber Springfield pistol, Model XD-40, serial number unknown. The Items 01-02, 01-04, and 01-05 copper jacketed bullets were identified as having been fired from the same unknown firearm. The Items 01-02, 01-04, and 01-05

TABLE 2

WebCode	Conclusions
	copper jacketed bullets were unable to be identified or eliminated as having been fired from the same firearm as the Items 01-01 and 01-03 copper jacketed bullets due to a lack of reproducible marks.
4UNVFN	Item 3 was identified to the bullets fired from the recovered firearm, marked as Item 1. Items 2, 4, 5 were identified as having been fired from the same unknown firearm. Items 2, 4, 5 were eliminated to Item 1 and Item 3.
4WGAXR	Item 3 was identified as having been fired from Item 1. Items 2, 4, and 5 are 40/10mm caliber bullets fired from a firearm having six lands and grooves with a right-hand twist. A list of potential firearms was generated and will be forwarded to the requesting officer; however, this list is not all inclusive and does not exclude other firearms having similar rifling characteristics as Items 2, 4, and 5. Items 2, 4, and 5 were not fired from Item 1. Items 2, 4, and 5 were identified as having been fired from the same unknown firearm.
4XMBNC	FROM THE MICROSCOPIC ANALYSIS OF THE 5 PIECES, THE FOLLOWING CONCLUSIONS WERE REACHED: 1.- ITEM 2, WHICH IS A BULLET RECOVERED FROM THE VICTIM, IT IS CONCLUDED THAT THERE IS NO CORRESPONDENCE WITH ITEM 1, WHICH CONSISTS OF 3 BULLETS FIRED BY THE SEIZED SPRINGFIELD XD-40 FIREARM. 2.- ITEM 3, WHICH WAS RECOVERED AT THE SCENE OF THE CRIME, IT IS CONCLUDED THAT THERE IS A CORRESPONDENCE WITH ITEM 1, CONSISTING OF 3 BULLETS FIRED BY THE SEIZED SPRINGFIELD XD-40 FIREARM. 3.- ELEMENT 4, WHICH IS A BULLET RECOVERED FROM THE SCENE OF THE CRIME, IT IS CONCLUDED THAT THERE IS NO CORRESPONDENCE WITH ELEMENT 1, CONSISTING OF 3 BULLETS FIRED FROM THE SPRINGFIELD XD-40 FIREARM RECOVERED. 4.- ELEMENT 5, WHICH IS A BULLET RECOVERED FROM THE SCENE, IT IS CONCLUDED THAT THERE IS NO CORRESPONDENCE WITH ELEMENT 1, CONSISTING OF 3 BULLETS FIRED FROM THE RECOVERED SPRINGFIELD XD-40 FIREARM.
4YZDLP	Recovered bullet labeled as Item 3 was fired for the same weapon wich fired the known bullets labeled as Item 1. Recovered bullets labeled as Item2, Item 4 and Item 5 were not fired for the same weapon wich fired the known bullets labeled as Item 1.
649N6Q	1. The firearm projectile identified as evidence Item 3, belongs to the .40" caliber, and was fired by the firearm that generated bullets know under study. Identified as Item 1. 2. The firearm projectiles identified as evidence Item 2, Item 4, and Item 5, belong to the .40" caliber and were fired by the same firearm, different from the firearm that generated bullet known under study.
6DV9FV	I microscopically compared Items 001-2 through 001-5 to each other and to test fired bullets from the Springfield XD-40 handgun, Item 001-1. I observed agreement of all discernable class characteristics with sufficient agreement of individual characteristics to conclude Item 001-3 was fired from the Springfield XD-40 handgun. I observed agreement of all discernable class characteristics with sufficient agreement of individual characteristics to conclude Items 001-2, 001-4, and 001-5 were fired from a single firearm. However, I observed significant disagreement of individual marks when I compared Item 001-2 to a test fired bullet from the Springfield XD-40 handgun. Therefore, I concluded Items 001-2, 001-4, and 001-5 were not fired from the Springfield XD-40 handgun.
6EAJ99	Upon request, a test fired bullet from Item 1 was microscopically examined and compared with a fired bullet, Item 3. Based on the observed agreement of their class characteristics and sufficient agreement of their individual characteristics, Item 3 is identified as having been fired from the same pistol as Item 1. Upon request, the fired bullets, Items 2, 4 and 5, were microscopically examined and compared with test fired bullets from Item 1, and the fired bullet,

TABLE 2

WebCode	Conclusions
	Item 3. There is observed agreement of their class characteristics. However, based on the observed disagreement of individual characteristics, Items 2, 4 and 5 were not identified as having been fired from the same pistol as Items 1 and 3.
6GVGMQ	The fired bullets from items 1 and 3 were fired in the same firearm. <also see below> [Table 3: Additional Comments]
6HTRHT	Bullet Analysis: Methodology: Physical (Visual Examination), Electronic Balance/Digital Caliper/Digital Micrometer, Microscopy (Comparison Microscope). Items 1, 2, 3, 4, and 5 are 40 caliber class bullets based upon the diameter. Items 1 and 3, the bullets, were fired through the barrel of the same firearm based upon corresponding class and individual microscopic characteristics. Items 2, 4, and 5, the bullets, were fired through the barrel of the same firearm based upon corresponding class and individual microscopic characteristics. Items 1 and 3, the bullets, were not fired through the barrel of the same firearm as Items 2, 4, and 5, the bullets, based upon different individual microscopic characteristics. Opinion/Interpretation: Items 1, 2, 3, 4, and 5 are consistent with bullets loaded in .40 S&W and 10mm Auto caliber cartridges based upon the weight and style.
6KFD4P	The projectiles from Items 2 through 5 have the same class characteristics as those exhibited in Item 1; however, because of the lack of sufficient suitable corresponding microscopic markings, it was not possible to identify these projectiles as having been fired in the same firearm (Inconclusive).
6M88A7	The submitted specimens marked as Items 2, 4, and 5 were examined and identified as three (3) fired .40 Smith & Wesson / 10mm Auto caliber bullets exhibiting six (6) land and groove impressions with a right twist. The submitted specimen marked as Item 3 was examined and identified as one (1) .40 Smith & Wesson caliber bullet exhibiting six (6) land and groove impressions with a right twist. Items 2-5 were microscopically inter-compared and compared to Item 1 sample bullets. As a result of microscopic comparison, it was concluded that Items 2, 4, and 5 were identified as having been fired in the same unknown firearm based on agreement of all discernible class characteristics and sufficient agreement of individual characteristics. Item 3 has been identified as having been fired from the same firearm that fired Item 1 sample bullets based on agreement of all discernible class characteristics and sufficient agreement of individual characteristics. Items 2, 4, and 5 have been eliminated as having been fired from the same firearm that fired Item 3 and Item 1 sample bullets due to significant disagreement of individual characteristics. Firearms that produce similar rifling characteristics as those exhibited on Items 2, 4 and 5 include but are not limited to: 10mm Auto caliber firearms manufactured by Heckler & Koch and Kriss USA; and .40 Smith & Wesson caliber firearms manufactured by Astra, Fabrique Nationale FN/ Browning, Heckler & Koch, Heritage, KSN Industries, Republic Arms, Ruger, Springfield, Taurus, TNW Incorporated and Walther.
6MMN6Y	The test-fired and evidence bullets were compared to each other using a comparison microscope. The test-fires showed agreement and were reproducing well. Based on the examination, it is my opinion that Item 3 was fired from the same firearm as the test-fires, Item 1, due to agreement of discernable class characteristics and sufficient agreement of individual characteristics. Based on the examination, it is my opinion that Items 2, 4, and 5 were fired from the same firearm due to agreement of discernable class characteristics and sufficient agreement of individual characteristics. Based on the examination, it is my opinion that Items 2, 4, and 5 can be eliminated as being fired in the same firearm as the test-fires, Item 1, due to significant disagreement of individual characteristics.
6RU4QG	Item 3 was fired from the same firearm as Item 1. Item 2, 4, and 5 were fired from the same firearm (not submitted).

TABLE 2

WebCode	Conclusions
6TCHBR	Three bullets in Item #1 were inter-compared and were readily identifiable. Item #1 was inter-compared to the bullets in Item #2, Item #3, Item #4 and Item #5 and was discovered to have the same class characteristics as Item #1. However, Item #2, Item #3, Item #4, and Item #5 lacked sufficient detail for an identification.
6ZAXR4	SUBMISSION 003: The projectile was identified to the submission 001 pistol. SUBMISSION 002, 004, 005: The projectiles were eliminated from the submission 001 pistol.
6ZRTA7	The reported test fired bullets, Items 01-01A, 01-01B, and 01-01C and the submitted fired bullet Item 01-03 were fired from the same firearm. The submitted fired bullets, Items 01-02, 01-04 and 01-05 were fired from the same firearm. Due to similarity of class characteristics and differences in individual characteristics (potentially due to differences in ammo) without the firearm for further testing and evaluation Items 01-01A, 01-01B, 01-01C and 01-03 could not be identified or eliminated as having been fired from the same firearm as Items 01-02, 01-04 and 01-05.
74L6LG	Items 1 (test fired bullets) and 3 were microscopically examined and compared. Based on observed agreement of class characteristics and sufficient agreement of individual characteristics, the bullet was identified as having been fired from the Springfield semiautomatic pistol. Items 2, 4, and 5 were microscopically examined and compared. Based on observed agreement of class characteristics and sufficient agreement of individual characteristics, the bullets were identified as having been fired from the same firearm. Items 1 (test fired bullets) and 2 were microscopically examined and compared. Based on observed disagreement of individual characteristics, the bullet was eliminated as having been fired from the Springfield semiautomatic pistol. Items 2, 4, and 5 have physical and design characteristics consistent with being .40/10mm caliber. A list of firearms that could have fired Items 2, 4, and 5 is too large for inclusion in this report, but can be provided upon request.
762MM2	Comparison microscope examinations were conducted on the submitted evidence. The findings of this examiner are the following: Exhibit 1 (test fires) and Exhibit 3 were fired with the same firearm based on sufficient agreement of individual characteristics present. Exhibit 2, Exhibit 4 and Exhibit 5 were fired with the same unknown .40 S&W caliber firearm based on sufficient agreement of individual characteristics present. Exhibit 2, Exhibit 4 and Exhibit 5 were not fired with the same .40 S&W caliber firearm as Exhibit 1 (test fires) and Exhibit 3 due to differences in individual characteristics present. No other analysis was conducted on submitted evidence.
76FVRV	From the analysis, we can conclude that: (i). All of (3) bullets from the test fired (from item 1 box) have the same characteristic and all of them are fired from the same firearm that was seized from the suspect vehicle. (ii). The rest bullet (From Item box 2,3,4 & 5) also has the same characteristic with the test fire bullet.
7D8BEE	Item#2 (B1),4 (B3) & 5 (B4) were microscopically compared to each other and were identified as having been fired from the same firearm. Item#1 (known) was microscopically compared to fire bullet Item#3 (B2) and an identification was made. Item#1 (known) and Item#3 (B2) were fired from the same firearm. Item#2 (B1), 4 (B3) & 5 (B4) were eliminated as having been fired from firearm Item#1 (known) due to differences in individual characteristics.
7GCA49	FROM THE MICRO COMPARISON STUDY OF THE BULLETS MARKED AS ITEM 1 COMPARED WITH THE BULLETS MARKED AS ITEM 2, ITEM 4 AND ITEM 5, IT IS CONCLUDED THAT THE RESULT IS AN ELIMINATION, WHICH MEANS THESE BULLETS WERE NOT FIRED BY THE SAME FIREARM. FROM THE MICRO COMPARATIVE STUDY OF THE BULLETS MARKED AS ITEM 1 IN COMPARISON WITH THE BULLET MARKED AS ITEM 3, IT IS CONCLUDED THAT THERE IS A POSITIVE IDENTIFICATION, WHICH MEANS THESE

TABLE 2

WebCode	Conclusions
	BULLETS WERE FIRED BY THE SAME FIREARM.
7KE8FM	The fired jacketed bullets in items 001-02, 001-03, 001-04, and 001-05 were microscopically compared to one another and to the test fired bullets in item 001-01 (recovered from Springfield XD-40) with the following results: Items 001-02, 001-04, and 001-05 were identified as having been fired through the barrel of the same unknown firearm. Item 001-03 was identified as having been fired through the barrel of the same firearm as the test fired bullets in item 001-01. Items 001-02, 001-04, and 001-05 were inconclusive as to having been fired through the barrel of the same firearm as the test fired bullets in item 001-01.
7QGRN6	The Item 01-01 fired bullets were fired from the same firearm, reported as being a Springfield Armory model XD-40 pistol. The Item 01-03 fired bullet was fired from the same firearm as Item 01-01. The Item 01-02, 01-04, and 01-05 fired bullets were fired from the same firearm. The Item 01-02, 01-04, and 01-05 fired bullets were not fired from the same firearm as Items 01-01 and 01-03. Items 01-02, 01-04, and 01-05 are 40 S&W/10mm Auto caliber fired bullets, and were fired in a firearm capable of discharging a 40 S&W/10mm Auto caliber cartridge. A list of possible firearms that could have fired Items 01-02, 01-04, and 01-05 would include, but not be limited to, the following: Beretta, Fabrique Nationale (FN), FN Browning, Heckler & Koch (H&K), Ruger, Smith & Wesson, Springfield Armory, and Taurus.
7TN7UB	Only the bullet from Item 3 was fired in the firearm seized from the crime scene. The bullet recovered from the victim's body, and the bullets from items 4 and 5 were not fired in this firearm. All three of them were fired in the same firearm, which is very likely of the same make and model as the one recovered.
7WQXCN	Items 2, 3, 4 and 5 are 40 caliber class bullets based upon the diameter. Opinion/Interpretation: Items 2, 3, 4 and 5 are consistent with bullets loaded in .40 S&W and 10mm Auto caliber cartridges based upon the weight and style. Items 2, 4 and 5 exhibit characteristics found in (but not limited to) the following firearms: Beretta, Ruger, SigArms, Springfield Inc. and Taurus .40 S&W caliber firearms. Item 3, the bullet, was fired through the barrel of the Springfield model XD-40 pistol based upon corresponding class and individual microscopic characteristics. Items 2, 4 and 5, the bullets, were not fired through the barrel of the Springfield model XD-40 pistol based upon different individual microscopic characteristics.
7Z98EU	Part I: Examined the three specimens marked #1. They each weigh 180 grains and indicate six lands and six grooves with a right hand twist. They are 40 caliber class discharged full metal jacketed bullets. Examined the specimen marked #3. It weighs 180 grains and indicates six lands and six grooves with a right twist. It is a 40 caliber class discharged full metal jacketed bullet. The bullets marked #1 and #3 were compared microscopically and identified as having been discharged from the same firearm. Part II: Examined the three specimens marked #2, #4, and #5. They each weigh 180 grains and indicate six lands and six grooves with a right hand twist. They are 40 caliber class discharged full metal jacketed bullets. The three bullets marked #2, #4, and #5 were compared microscopically and identified as having been discharged from the same firearm. The bullets marked #1 and #3 were compared microscopically to the bullets marked #2, #4, and #5 and were eliminated as having been discharged from the same firearm.
7ZQA8N	Bullet Analysis: Methodology: Physical (Visual Examination), Electronic Balance/Digital Caliper/Digital Micrometer, Microscopy (Comparison Microscope). Items 1, 2, 3,4 and 5 are 40 caliber class bullet based upon the diameter. Items 1A, 1B and 1C, the bullets identified to be test fired from suspect firearm, were fired through the barrel of the same firearm as Item 3, the fired bullet, based upon corresponding class and individual microscopic characteristics. Items 1A, 1B, 1C, and 3, the bullets identified to be test fired from suspect firearm and the

TABLE 2

WebCode	Conclusions
	bullet, were not fired through the barrel of the same firearm as Items 2, 4 and 5, the bullets, based upon different individual microscopic characteristics. Items 2, 4 and 5, the bullets, were fired through the barrel of the same firearm based upon corresponding class and individual microscopic characteristics. Opinion/Interpretation: Items 1, 2, 3, 4 and 5 are consistent with bullets loaded in .40 S&W/10mm Auto caliber cartridges based upon the weight/style. Items 2, 4 and 5 exhibit characteristics found in (but not limited to) the following firearms: Astra, Fabrique Nationale, FN/Browning, Heckler & Koch, Ruger, Springfield Inc., Taurus and Walther .40 S&W caliber firearms; Heckler & Koch 10mm Auto caliber firearms.
83QE6N	that projectile number 3 was fired at the recovered firearm, establishing identity between projectile number one and projectile number 3.
84Y2PZ	Items – Description/Visual Examination Item 1: Three (3) fired 40 caliber full metal jacket bullets with six (6) lands and grooves right-hand twist rifling impression, reportedly recovered from a Springfield XD-40 semi-automatic pistol. Items 2 thru 5: Four (4) fired 40 caliber full metal jacket bullets with six (6) lands and grooves right-hand twist rifling impression. Microscopic Comparison. Conclusions - Identification: Based upon the reproducibility of class characteristics and microscopic individual characteristics, the following identifications were made: Item # 3 - one (1) fired projectile was fired thru the same barrel as Item 1 (Springfield pistol). Elimination: Based upon the difference in individual characteristics, the following eliminations were made: Items # 2, 4, & 5 - three (3) fired projectiles were not fired thru the same barrel as Item 1 (Springfield pistol).
8DNPMN	[No Conclusions Reported.]
8EGHH8	The projectile in Item 3 was fired in the same gun that fired the projectiles in Item 1, based on agreement observed in individual characteristics. The projectiles in Items 2, 4 and 5 bear class characteristics consistent with the projectiles in Item 1. However, no significant similarities in individual characteristics were observed.
8GBGHR	The Item 1 and 3 bullets were identified, within the limits of practical certainty, as having been fired from the same firearm. The Item 1 bullets were eliminated as having been fired from the same firearm that fired the Item 2, 4 and 5 bullets. The Item 2, 4 and 5 bullets were identified, within the limits of practical certainty <sup>1</sup> , as having been fired from the same firearm. Two (2) firearms are represented by the submitted bullets.
8LKMAR	The first bullet recovered from the scene identified as ITEM 3 were fired by the handgun Springfield XD-40 seized from the suspect's car.
8P4UF7	The four bullets (Items 2, 3, 4, and 5) were microscopically compared to test fired bullets from the Springfield XD-40 handgun (Item 1). Based on sufficient corresponding individual barrel markings observed, the bullet (Item 3) was identified as having been fired from the Springfield handgun (Item 1). Because of differences observed in individual characteristics, the three bullets (Items 2, 4, and 5) were eliminated as having been fired from the Springfield handgun (Item 1).
8PXM7H	1). The bullet marked E-1 to E-3, corresponding in Item 1 and the bullet marked E-5 corresponding in Item 3, are .40 / 10mm caliber, with right striation (R-6) and were fired by the same firearm (Identification). 2). The bullet marked E-4 corresponding in Item 2, the bullet marked E-6 corresponding in Item 4 and the bullet marked E-7 corresponding in Item 5, are .40 / 10mm caliber, with right striation (R-6) and were fired by the same firearm (Identification).
8Y9QDG	The questioned bullets marked "Item 2" to "Item 5" were compared with the test-fired bullets

TABLE 2

WebCode	Conclusions
	<p>marked "Item 1". - There were no exclusionary differences in class characteristics and sufficient agreement of individual characteristics within the land impressions, to determine that "Item 3" was fired in the same firearm that fired "Item 1". - There were significant disagreement of individual characteristics within the land impressions of the other three questioned bullets compared to those of the test-fired bullets, indicating that "Item 2", "Item 4" and "Item 5" were not fired in the same firearm that fired "Item 1".</p>
973DJ8	<p>The recovered questioned bullet (Item 3) was fired in the same firearm as the known bullets (Item 1). The recovered questioned bullets (Items 2, 4 and 5) were not fired in the same firearm as the known bullets (Item 1). They were all fired in another firearm.</p>
977QDV	<p>Item A3 was discharged in the same firearm as Item A1. Item A2, Item A4, and Item A5 were not discharged in the same firearm as Item A1. Item A2, Item A4, and Item A5 were discharged in the same, unknown firearm.</p>
9BE2K4	<p>Item 3 was fired in the same firearm as the Item 1 test fires. Items 2, 4 and 5 were fired in a second firearm. Items 2, 4 and 5 are consistent with bullets from ammunition designated 40 S&amp;W. A list of makes of firearms that may have fired these items includes, but is not limited to: Astra, Fabrique Nationale, FN/Browning, Heckler &amp; Koch, Heritage, KSN Industries, Republic Arms, Ruger, Sigarms, Springfield, and Taurus.</p>
9GN7K4	<p>Item 1.1 consists of three fired bullets stated to have been fired by a Springfield brand 40 S&amp;W pistol, model XD-40. Items 1.2, 1.3, 1.4 and 1.5 are consistent with four fired 40 caliber bullets having six land and groove impressions with a right twist. They were microscopically compared to each other and to the bullets from Item 1.1 and the results are as follows: Based on agreement of all discernible class characteristics and corresponding individual detail in the land impressions, Item 1.3 was identified as having been fired by the same firearm that fired the bullets from Item 1.1. Based on agreement of all discernible class characteristics and corresponding individual detail in the land impressions, Items 1.2, 1.4 and 1.5 were identified as having been fired by the same firearm. Based on a disagreement of individual detail in the land impressions, Items 1.2, 1.4 and 1.5 were eliminated as having been fired by the same firearm that fired Items 1.1 and 1.3.</p>
9LXQ6V	<p>Item 3 was microscopically identified as having been fired from the same firearm that generated the Item 1 test fires. Items 2, 4, and 5 were microscopically identified as having been all fired from a second unknown firearm.</p>
9NKK96	<p>The bullet for item3 was fired by the handgun Springfield XD-40 seized from the vehicle of a suspect. Three (03) bullets for item2, item4 and item5 were not fired by the same handgun (springfield XD-40).</p>
9QTDZ4	<p>2021 CTS Forensic Testing Program Test No. 20-5262 Firearms Examination NOTES: Date Worked 12/1/21 Test Bullet 1A, Item 1 was compared microscopically to Items 2, 3, 4 and 5. Item 3 was found to have a sufficient agreement between striations to Item 1; therefore, Item 3 was fired from the recovered firearm. Items 2, 4 and 5 were found to have a disagreement of individual characteristics to Item 1; therefore, Items 2, 4 and 5 were fired from a different firearm than the recovered firearm. Items 2, 4 and 5 were compared microscopically to each other and were found to have a sufficient agreement between striations; therefore, Items 2, 4 and 5 were fired from the same firearm. Items 2, 3, 4 and 5 will be forwarded to the Property Custody Division. Equipment used: Leeds LCF3 Comparison Microscope Serial # 485127 REPORT: Items 2, 3, 4, 5: A microscopic comparison was conducted between Test Bullet 1, Item 1 that was fired from the recovered firearm and Items 2, 3, 4 and 5. The examinations determined that Item 3 was fired from the recovered firearm, due to a sufficient agreement</p>

TABLE 2

WebCode	Conclusions
	between striations. The examinations determined that Items 2, 4 and 5 were fired from a different firearm than the recovered firearm due to a disagreement of individual characteristics. A microscopic comparison was conducted between Items 2, 4 and 5. The examinations determined that Items 2, 4 and 5 were fired from the same firearm due to a sufficient agreement between striations. Disposition: The above listed evidence will be forwarded to the Property Custody Section.
9THRHM	Item 3 was fired in the same firearm as Item 1 (identification). This is also the opinion of Firearms Examiner (NAME). Items 2, 4, and 5 were not fired in the same firearm as Item 1 (elimination). This is also the opinion of Firearms Examiner (NAME). Items 2, 4, and 5 were fired in the same firearm (identification). This is also the opinion of Firearms Examiner (NAME). Items 2, 4, and 5 are consistent with the 40 caliber family, which includes 40 S&W and 10mm Auto.
9UQGT6	The recovered firearm indicated as (item 1) fired the bullet indicated as item 3.
9XRUKH	In my opinion the test fired bullets from the Springfield XD40 pistol (item1) were a match for the bullet item3. They did not match items 2,4 and 5. Items 2,4 and 5 had matching areas that indicated they were all fired in a different firearm.
9Y3W8G	Items 2,4, and 5 were microscopically examined and identified as having been fired from the same unknown firearm based on agreement of the combination of individual characteristics as well as all discernible class characteristics. Item 3 was microscopically examined and identified as having been fired from the same firearm as the Item 1 known bullets based on agreement of the combination of individual characteristics and all discernible class characteristics. Item 3 was eliminated as fired in the same unknown firearm as Items 2,4, and 5 based on disagreement of individual characteristics.
A28WTY	ITEM 1 and 3: The item 3 bullet was identified to the recovered firearm (item 1 bullets). ITEMS 2, 4, and 5: The bullets were eliminated from the recovered firearm (item 1 bullets). These bullets may be identified with the submission of another firearm.
A7HUGL	Item 3 was discharged from the same firearm that discharged Item 1.
A8AQ4U	1-Item(3) fired from the recovered firearm that used in item(1). 2-Item(2),Item(4) ,and Item(5) fired by the same firearm but they weren't fired from the recovered firearm that used in item(1).
ACMLR6	This report refers to exhibits by Lab Number. The following results only apply to the items tested. The Exhibit 1.3 bullet and the Exhibit 1.1.1 test fired bullet were microscopically compared. Based on the agreement of class characteristics and sufficient agreement of individual characteristics, the Exhibit 1.3 bullet was identified as having been fired from the same firearm as Exhibit 1.1.1. The probability that the toolmarks on Exhibit 1.3 were made by a different source, other than the firearm that fired Exhibit 1.1.1, is so small that it is negligible. The Exhibit 1.2, 1.4, and 1.5 bullets were microscopically compared. Based on the agreement of class characteristics and sufficient agreement of individual characteristics, the Exhibit 1.2, 1.4, and 1.5 bullets were identified as having been fired from the same firearm. The probability that the toolmarks on Exhibits 1.2, 1.4, and 1.5 were made by a different source, other than the same firearm, is so small that it is negligible. The Exhibit 1.1.1 through 1.1.3, and 1.3 bullets were microscopically compared to the Exhibits 1.2, 1.4, and 1.5 bullets. Based on the agreement of class characteristics and difference of individual characteristics, the Exhibits 1.1.1 through 1.1.3, and 1.3 bullets were excluded as having been fired from the same firearm as the Exhibits 1.2, 1.4, and 1.5 bullets. The Exhibits 1.2, 1.4, and 1.5 are .40/10mm caliber class bullets fired from a barrel having six (6) lands and grooves with a right-hand twist. The

TABLE 2

WebCode	Conclusions
	firearm that could have fired the bullets includes numerous makes and models. These conclusions conform with the relevant Department of Justice policy on Uniform Language for Testimony and Reports available at <a href="http://www.justice.gov">www.justice.gov</a> .
AD4PHP	Bullets identified as item 2, item 4, and item 5, have not been fired by the Springfield XD-40 .40 S&W caliber firearm. Bullet identified as item 3, have been fired by the Springfield XD-40 .40 S&W caliber firearm.
AF4LUK	The four items presented as 2, 3, 4 and 5 were compared microscopically with the impressions of the land and the Groove in Item 1, which determined that: Bullet Item 1 and bullet Item 3 have class, subclass and identity characteristics to be fired by the same weapon, and bullets Items 2, 4 and 5 were fired by the same firearm but different from Items 1 and 3
AG32DP	The Springfield XD-40 handgun seized from the vehicle of the suspect, fired the first bullet recovered from the parking garage (Item 3). The Springfield XD-40 handgun seized from the vehicle of the suspect, did not fired the bullet recovered from the victim (Item 2) and did not fired the second and third bullets recovered from the parking garage (Items 4-5). The bullet recovered from the victim and the second and third bullets recovered from the parking garage, were fired by the same firearm.
AKFE86	[No Conclusions Reported.]
APRGTZ	One .40 AUTO ammunition bullet (item 3) were fired from suspect's Springfield XD-40 handgun. Three .40 AUTO ammunition bullets (items 2, 4 and 5) were not fired from suspect's Springfield XD-40 handgun.
AV22AY	1) Exhibits 1 (Three .40 Bullets), 2 (One .40 Bullet), 3 (One .40 Bullet), 4 (One .40 Bullet), and 5 (One .40 Bullet) were visually examined and microscopically compared to each other. a) The Exhibit 3 bullet was fired from the same firearm as the Exhibit 1 bullets based on an agreement of all discernible class characteristics and a sufficient agreement of individual characteristics. b) The Exhibits 2, 4, and 5 bullets were all fired from the same firearm based on an agreement of all discernible class characteristics and a sufficient agreement of individual characteristics. c) The Exhibits 2, 4, and 5 bullets were not fired from the same firearm as the Exhibit 1 bullets based on an agreement of all discernible class characteristics and a sufficient disagreement of individual characteristics. Observing this amount of disagreement from the same source is considered extremely remote.
AYWYDW	The Item 1 through 5 bullets, each consistent in design with a caliber 40 Smith & Wesson/10mm Auto bullet, were examined microscopically. The Item 1 and 3 bullets were identified as having been fired from the same firearm based on corresponding class and individual characteristics. The Item 2, 4, and 5 bullets were identified as having been fired from the same firearm based on corresponding class and individual characteristics. The Item 2, 4, and 5 bullets were eliminated as having been fired from the same firearm as the Item 1 and 3 bullets based on sufficient differences in individual characteristics. Firearms that produce general class characteristics like those present on Items 2, 4, and 5 include firearms chambered to fire 40 Smith & Wesson cartridges with the brand names listed below. Beretta, Fabrique Nationale/FNH USA, Ruger, SIG Arms/SIG Sauer, Springfield Armory, Taurus, and Walther This list is not all-encompassing. It is possible another brand of firearm produced these class characteristics and is not listed due to the content of the databases searched.
B48Y3F	Items 1 through 5 are .40 caliber consistent with bullets loaded in .40 S&W caliber/10mm Auto full metal jacket bullets. The Item 3 bullet was identified as having been fired from the barrel of the same firearm as the Item 1 bullets. A pattern examination of the Item 2, Item 4, and the Item 5 bullets to the Item 1 and Item 3 bullets were inconclusive due to a lack of

TABLE 2

WebCode	Conclusions
	sufficient corresponding microscopic marks of value. The Item 2, Item 4, and Item 5 bullets were identified as having been fired from the barrel of the same firearm.
BUPN8N	The Item 1 agency generated test fired bullets and Item 3 were identified, within the limits of practical certainty, as having been fired by the same firearm. The Item 2, 4 and 5 bullets were identified, within the limits of practical certainty, as having been fired by the same firearm but were not fired by the same firearm that generated the Item 1 test fired bullets.
BYE83Q	From the sample that had been received, it can be concluded that each bullet consists of 40 auto calibre ammunition and the rifling type for each bullet is "cut or button" which give the land and groove mark also the characteristics on the bullet for ballistic test. The results of analysis and comparison of (1) bullets in item 2, (1) bullets in item 3, (1) bullets in item 4 and (1) bullets in item 5 found that they have similar individual characteristics.
BZLMBH	The above evidence was microscopically examined and intercompared. In my opinion, Item 3 is identified as being fired in the Springfield XD40 .40S&W pistol that fired the submitted bullets labeled as Item 1, based on the significant agreement seen in the land and groove engraved areas on the bullets.
C9EP4Z	CONCLUSIÓN PRIMERA: LAS BALAS IDENTIFICADAS COMO ITEM 2, ITEM 3, ITEM 4 E ITEM 5, SE DETERMINA QUE CORRESPONDEN AL CALIBRE POR DESIGNACIÓN CUARENTA SMITH AND WESSON (.40 S&W). CONCLUSIÓN SEGUNDA: AL REALIZAR EL ESTUDIO MICRO COMPARATIVO ENTRE LAS BALAS ROTULADAS COMO ITEM 2, ITEM 4 E ITEM 5 Y LAS BALAS TESTIGO ROTULADAS COMO ITEM 1, SE DETERMINA QUE TODAS ELLAS NO FUERON DISPARADAS POR EL ARMA DE FUEGO CALIBRE POR DESIGNACIÓN CUARENTA SMITH AND WESSON (.40 S&W), DE LA MARCA SPRINGFIELD, MODELO XD-40, SIN NÚMERO DE SERIE. CONCLUSIÓN TERCERA: AL REALIZAR EL ESTUDIO MICRO COMPARATIVO ENTRE LA BALA ROTULADA COMO ITEM 3 Y LAS BALAS TESTIGO ROTULADAS COMO ITEM 1, SE DETERMINA QUE TODAS ELLAS FUERON DISPARADAS POR EL ARMA DE FUEGO CALIBRE POR DESIGNACIÓN CUARENTA SMITH AND WESSON (.40 S&W), DE LA MARCA SPRINGFIELD, MODELO XD-40, SIN NÚMERO DE SERIE. [English translation of comments was not obtained by the time of report publication]
CADVME	1. The projectile identified as item 3, and the three projectiles identified as item 1, have the same class and identity characteristics, so it is concluded that they correspond to the real caliber 9 mm and they were fired by a first firearm. 2. The three projectiles identified as items 2, 4 and 5, have the same class and identity characteristics, so it is concluded that they correspond to the real caliber 9 mm and they were fired by a second firearm.
CJWWQ9	There are 2 firearms represented by the evidence bullets. Through microscopic examination and comparison, it was determined that: 1. Items 1 and 3 had been fired by the same firearm. 2. Items 2, 4 and 5 had been fired by a second firearm.
CJX2JJ	analyzed the bullets of item No. 1 with bullets item No. 2, No. 3, No. 4 and No. 5 microscopically the lands impressions and the groove impressions massifs it was determined that the bullets of item No. 1 and No. 3 have class characteristics, his class and identity to be shot by the same barred the weapon. And the bullets of item No. 2, No. 4 and No. 5 were fired by the same weapon but different from that fired from item No. 1 and No. 3.
CK9GXX	Item 3 was identified microscopically as having been fired from the same firearm that reportedly fired Items 1A - 1C, based on agreement of the combination of individual characteristics and all discernible class characteristics. Items 2, 4 and 5 were identified microscopically as having been fired from the same unknown firearm based on agreement of the combination of individual characteristics and all discernible class characteristics. Items 2, 4

TABLE 2

WebCode	Conclusions
	<p>and 5 were microscopically eliminated as having been fired from the same firearm that fired Item 3 and reportedly fired Items 1A - 1C due to disagreement of discernible individual characteristics. Visual and microscopic examination of Items 2, 4 and 5 revealed them to be 40/10mm caliber-class bullets fired from a firearm with a rifling system of six (6) lands and grooves with a right twist. Among the more common firearms that could have possibly fired Items 2, 4 and 5 include, but are not limited to, the following: Astra, Beretta, Ceska Zbrojovka, FN/Browning, Heckler &amp; Koch, Ruger, Sigarms, Smith &amp; Wesson, Springfield Armory and Taurus brands 40 S&amp;W semi-automatic pistols. The list of possible firearms was generated using an in-house expanded version of the General Rifling Characteristics Database created by the Federal Bureau of Investigation. This is not meant to be an all-inclusive list but rather an investigative aide; and any suspect firearm(s) of the appropriate caliber-class should be submitted for comparison; however, a complete list of the search results will be maintained in the case file. Current Integrated Ballistics Identification System (IBIS) / BrassTRAX technology in this laboratory is not capable of bullet imaging; therefore, no entry was made. All evidence items are being returned.</p>
CRUWGH	<p>By the microscopy examination of the bullet cores obtained from the victim and the crime scene, it was determined that they were divided into two groups due to their surface property characteristics as 3(Item 2-Item 4- Item 5) and 1(Item3) . The bullet core named Item 3 which is obtained from crime scene and the bullet cores named Item 1 which are fired from suspect gun have the same characteristics in terms of surface properties.</p>
CTMKLC	<p>Items 1,2,3,4,5 were compared microscopically with each other with these results: Item 3 is an Identification with Item 1 due to the sufficient quantity and quality of corresponding individual characteristics in their striations. Thus, it is the opinion of this Examiner that Item 3 was fired from the recovered firearm. Items 2,4,5 are Eliminations with Item 1 due to the sufficient quantity and quality of differing individual characteristics in their striations. Thus, it is the opinion of this Examiner that Items 2,4,5 were not fired from the recovered firearm. - Items 2,4,5 are Identifications with each other due to the sufficient quantity and quality of corresponding individual characteristics in their striations. Thus, it is the opinion of this Examiner that Items 2,4,5 were fired from the same firearm (that is not yet identified).</p>
CXH6WM	<p>1. A comparative microscopy examination of the test fired bullets in Item 1 and the exhibit fired bullets in Items 2, 3, 4 and 5 was conducted. 1.1 The fired bullet in Item 3 and the test fired bullets in Item 1 had agreement of all discernible class characteristics and sufficient agreement in individual characteristics that is consistent with the agreement demonstrated in toolmarks known to have been produced by the same tool. 1.2 The fired bullets in Items 2, 4 and 5 had agreement of all discernible class characteristics and sufficient agreement in individual characteristics that is consistent with the agreement demonstrated in toolmarks known to have been produced by the same tool. 2. In my opinion: 2.2 The fired bullet in Item 3 was discharged from the exhibit .40 Smith &amp; Wesson calibre Springfield Model XD-40 self-loading pistol. 2.3 The fired bullets from Items 2, 4 and 5 were all discharged from a second firearm.</p>
D7LNMW	<p>Item 3 was identified microscopically as having been fired from the same firearm that reportedly fired the test fires, Item 1, based on agreement of the combination of individual characteristics and all discernible class characteristics. Items 2, 4, and 5 were microscopically eliminated as having been fired from the same firearm that reportedly fired the test fires, Item 1, due to disagreement of discernible individual characteristics. Items 2, 4, and 5 were identified microscopically as having been fired from the same unknown firearm based on agreement of the combination of individual characteristics and all discernible class characteristics.</p>

TABLE 2

WebCode	Conclusions
D8WTZK	The Springfield XD-40 handgun (submitted as Item 1) did not fire bullet recovered "from the victim (submitted as Item 2), and also, did not fire the bullets recovered "from scene" (submitted as Item 4 and 5). The Springfield XD-40 handgun (submitted as Item 1) fired the bullet recovered "from the scene" (submitted as Item 3). The bullet recovered "from the victim (submitted as Item 2)" and the bullets recovered "from scene" (submitted as Item 4 and 5) were fired by the same weapon.
DGPUQW	Examinations showed Item 3 was discharged from the Springfield XD-40 (Item 1). Examinations showed Items 2, 4, and 5 were discharged from the same unknown firearm.
DNQNQC	Item F2 consisted of item 1, three bullets test fired in a pistol recovered from the suspect, and items 2 through 5, four bullets recovered from the victim and crime scene. The items were each identified as expended nominal 40 caliber (10 millimeter) bullets with six-right conventional rifling impressions. Based on correspondence of firearm-related class characteristics and significant correspondence of individualizing characteristics, I determined that item 3 was fired from the firearm used to generate the item 1 test fired bullets. Comparison of items 2, 4, and 5 to the item 1 bullets was inconclusive. While the firearm-related class characteristics were the same, only limited correspondence of individualizing characteristics was observed between items 2, 4, and 5 and the item 1 bullets. Items 2, 4, and 5 may have been fired from the firearm used to generate the item 1 test fired bullets, or from any other firearm with similar class characteristics.
DUDDAM	Questioned bullet 3 (Item 3) was fired from the same firearm as the known bullets. It is likely that the questioned bullets 2, 4 and 5 (Item 2, 4 and 5) were fired from a different firearm as the known bullets (Item 1).
DZ3T2E	Item 1 consists of three (3) .40 caliber copper-jacketed flat nose bullets fired from the barrel of a known Springfield XD-40 pistol. Item 2 through Item 5 consist of four (4) 10mm / .40 caliber copper-jacketed flat nose bullets. The Item 3 bullet was identified as having been fired from the same barrel as the Item 1 known test-fired bullets. The Item 2, Item 4, and Item 5 bullets were identified as having been fired from the same barrel. Pattern examinations of the Item 2, Item 4, and Item 5 bullets and known test-fires submitted in Item 1 and Item 3 bullet were inconclusive due to a lack of sufficient corresponding microscopic marks of value.
DZ4MHZ	The Springfield XD-40 pistol that was seized in an SI vehicle fired the bullet marked ITEM # 3 (first bullet recovered from the scene). The Springfield XD-40 pistol that was seized in a vehicle did NOT fire the bullets marked ITEM # 2 (bullet recovered from the victim), ITEM # 4 (second bullet recovered from the scene) and ITEM # 5 (third bullet recovered from the scene). ITEM # 2 (bullet recovered from the victim), ITEM # 4 (second bullet recovered from the scene) and ITEM # 5 (third bullet recovered from the scene) there is an agreement of class and individual characteristics, in the scratching of the Field impressions and striae expressions allowing to determine that they were produced by the same barrel of an unknown firearm.
E2PLV2	Items 2, 4 and 5 (bullets) were fired from the same unknown (a second) firearm. Item 3 was fired from the firearm that fired the item 1 (1A, 1B and 1C) bullets.
EBJKVM	Items 2, 4, 5 (fired bullets) Microscopic comparison of these fired bullets and a test-fired bullet from the Springfield pistol revealed that they have similar class of rifling marks, but significant disagreement in individual marks. These bullets were not discharged in the Springfield pistol, item 1. Microscopic comparison of items 2, 4, and 5 revealed that they have the same class of rifling and sufficient corresponding individual marks to conclude that these bullets were discharged in the same unknown firearm. Item 3 (fired bullet) Microscopic comparison of this fired bullet and a test-fired bullet from the Springfield pistol revealed that they have the same

TABLE 2

WebCode	Conclusions
	class of rifling and sufficient corresponding individual marks to conclude that this bullet, item 3, was discharged in the Springfield pistol, item 1.
EF97DA	The fired projectile, Item 3, was identified as having been fired in the same firearm as the test fired projectiles, within Item 1, based on agreement of class characteristics and sufficient agreement of individual characteristics within the land impressions. The fired projectiles, Item 2, Item 4 and Item 5, were identified as having been fired in the same firearm based on agreement of class characteristics and sufficient agreement of individual characteristics within the land impressions. The fired projectiles, Item 2, Item 4 and Item 5, were eliminated from having been fired in the same firearm as the test fired projectiles, within Item 1, based on agreement of class characteristics but significant disagreement of individual characteristics within the land impressions.
EKMKMA	Item 2 to 5 each consisted of one fired bullet in .40" AUTO calibre. Microscopic comparison was conducted on Item 2 against the test fired bullet in Item 1 but the result was inconclusive. Microscopic comparison was conducted on Item 3 against Item 1 which showed that they were discharged from the same firearm. Microscopic comparison was conducted on Item 4 against the test fired bullet in Item 1 but the result was inconclusive. Microscopic comparison was conducted on Item 5 against the test fired bullet in Item 1 but the result was inconclusive.
EPHEHP	In my opinion test fired bullets fired from the recovered firearm matched item 3 on significant fine matching detail within the lands.
EV4LLF	Examinations showed Item 3 was discharged from the same firearm as Item 1. Examinations showed Items 2, 4, and 5 were not discharged from the same firearm as Item 1. Items 2, 4, and 5 were discharged from the same unknown firearm.
EWDC8D	The recovered bullet labeled Items 3 was fired in the same firearm as the known bullets (Item 1) The recovered bullets labeled Items 2, Item 4 and Item 5 was not fired in the same firearm as the known bullets (Item 1)
EWJF2	Item 3 was fired by the weapon that fired test firings in item 1. Items 2, 4, and 5 were fired from the same unknown weapon, but not the weapon that fired the test firings contained in item 1.
F3JKVL	1). Projectile B (Item 3) was identified as having been fired in the same firearm as the known spent projectiles, Item 1. 2). Projectiles A, C, and D (Items 2, 4, and 5) were fired in a second firearm. Suspect weapons include .40 S&W Springfield Armory pistols; however, any suspect weapon should be submitted to the laboratory for analysis.
FBQT7E	After comparing the bullets received for study, it was established that the ITEM 2, 4 and 5 bullets were fired by the same firearm, the item 3 bullet was fired by a different firearm than the previous one. After comparing the 04 bullets with the standard ITEM 1 bullets, microscopic characteristics of identity with the ITEM 3 bullet were established, being fired by the same firearm.
FCLRPZ	The class characteristics and individual details of bullet item 3 matches the class characteristics and individual details of comparison bullets item 1. Therefore bullet item 3 has been shot with the same gun as bullets item 1. The class characteristics and individual details of bullets item 2, 4 and 5 does not match the class characteristics and individual details of comparison bullets item 1. Therefore bullets item 2, 4 and 5 has not been shot with the same gun as bullets item 1. The class characteristics and individual details of bullets item 2, 4 and 5 matches the class characteristics and individual details of each other. Therefore bullets item 2, 4 and 5 has been shot with the same gun.

TABLE 2

WebCode	Conclusions
FCMKKL	The Item 2, 4, and 5 projectiles were microscopically compared and determined to have similar class characteristics and sufficient agreement of individual characteristics for an identification. Therefore, Items 2, 4, and 5 were fired from the same firearm. The Item 3 projectile was microscopically compared with the Item 1 test fired projectiles and determined to have similar class characteristics and sufficient agreement of individual characteristics for an identification. Therefore, Item 3 was fired from the same firearm which fired the Item 1 test fired projectiles. Items 2, 4, and 5 were microscopically compared with Item 3 and the Item 1 test fired projectiles and determined to have disagreement of individual characteristics. Therefore, Items 2, 4, and 5 were not fired from the same firearm which fired Item 3 and the Item 1 test fired projectiles.
FKK8KY	Item 1-3 bullet (recovered from the scene) was fired from the recovered Springfield Armory Model XD-40 semi-automatic pistol. Items 2, 4, and 5 were all fired from the same unknown weapon capable of firing .40 caliber ammunition. Not the recovered Springfield Armory Model XD-40 semi-automatic pistol.
FNETDA	Items 2 through 5 were examined and determined to be consistent in size, shape, composition, and weight with copper jacketed .40 caliber projectiles fired from a firearm rifled with six land and groove impressions with a right-hand twist. Utilizing stereomicroscopic examination, it was determined that Items 2 through 5 exhibit sufficient tool mark information for comparison to known firearms. Items 2, 4, and 5 were compared microscopically to the test fired projectiles in Item 1. It was determined that Items 2, 4, and 5 were not fired in the same firearm as the Item 1 test fires. Item 3 was compared microscopically to the test fired projectiles in Item 1. It was determined that Item 3 was fired in the same firearm as the Item 1 test fires.
FQ78TY	Item 3 was identified as having been fired by the same firearm that fired Item 1. This identification is based on the agreement of class characteristics, and individual characteristics observed in the land engraved areas. Items 2, 4, and 5 were identified as having been fired by the same unknown firearm. This identification is based on the agreement of class characteristics, and individual characteristics observed in the land engraved areas. Items 2, 4, and 5 were eliminated as having been fired by the same firearm that fired Items 1 and 3. This elimination is based on the disagreement of individual characteristics observed in the land engraved areas.
FUPCBU	Item 1 – Three test fired bullets using recovered firearm (known). Item 2 – One fired bullet. Item 3 – One fired bullet. Item 4 – One fired bullet. Item 5 – One fired bullet. The submitted specimens marked as Items 2, 3, 4, and 5 were examined and identified as four (4) fired 40 caliber class bullets exhibiting six (6) land and groove impressions with a right twist. Items 2, 3, 4, and 5 were microscopically inter-compared and compared to Item 1 test fired bullets. As a result, Items 2, 4, and 5 were identified as having been fired from the same unknown firearm. Item 3 and Item 1 test fired bullets were identified as having been fired from the same known firearm. Items 2, 4, and 5 and Item 3 and Item 1 test fired bullets exhibit similar class characteristics; however, Items 2, 4, and 5 and Item 3 and Item 1 test fired bullets could not be identified or eliminated as having been fired from the same firearm due to a lack of agreement or disagreement of individual characteristics.
FVMHVV	1). Examinations showed Item 3 was discharged from the same firearm as Item 1. 2). Examinations showed Items 2, 4 and 5 were not discharged from the same firearm as Item 1.
G7XH2M	The bullet Item 3 was microscopically identified as having been fired from the Item 1 pistol. The bullet was determined to be of 40/10mm caliber displaying conventional rifling characteristics of six lands and grooves, right twist. Items 2, 4, 5: The bullets were all microscopically identified as having been fired from the same firearm, but a different firearm than the Item 1

TABLE 2

WebCode	Conclusions
	firearm. The bullets were determined to be of 40/10mm caliber displaying conventional rifling characteristics of six lands and grooves, right twist. Manufacturers of firearms with similar rifling characteristics include, but are not limited to Astra, Beretta, CZ, FN/Browning, Heckler and Koch, Heritage, KSN Industries, Republic Arms, Ruger, Sigarms, Springfield Inc., Taurus and TNW Incorporated.
GGYZFW	Item #1 was microscopically examined and compared to Item #3. Based on the observed agreement of their class characteristics and sufficient agreement of their individual characteristics, Item #1 and Item #3 are identified as having been fired from the same firearm. Items #2, #4 and #5 were microscopically examined and compared. Based on the observed agreement of their class characteristics and sufficient agreement of their individual characteristics, Items #2, #4 and #5 are identified as having been fired from the same firearm. Item #1 and Items #2, #4 and #5 were microscopically examined and compared. Based on the observed disagreement of individual characteristics, Item #1 and Items #2, #4 and #5 are eliminated as having been fired from the same firearm.
GH9WYF	Item 3 was fired in the same firearm as the known bullets (Item 1). Items 2, 4, and 5 were fired in the same unknown firearm.
GHARHL	From the analysis we can concluded that: (i). All of (3) bullet from the test fired (from item 1 box) have a same characteristic and all of them are fired from the same firearm that was seized from the suspect vehicle. (ii). The rest bullet (From Item box 2,3,4 & 5) also has a same characteristic with the test fire bullet.
GPBWJH	The results strongly support that the cartridge case Item 3 have been fired in the firearm Item 1. The results support that the cartridge cases Item 2, Item 4 and Item 5 have not been fired in the firearm Item 1. The results strongly support that the cartridge cases Item 2, Item 4 and Item 5 have been fired in a second firearm.
GQK79U	Exhibits 1, 2, 3, 4, and 5 were microscopically examined and compared. Each of the Exhibit 1, 2, 3, 4, and 5 bullets are caliber 40 S&W/10mm Auto and were fired from a firearm having a barrel rifled with six (6) lands and grooves inclined to the right. Based on agreement of all discernible class characteristics and sufficient correspondence of individual characteristics, Exhibit 3 was identified as having been fired from the same firearm as the Exhibit 1 bullets. Based on agreement of all discernible class characteristics and sufficient correspondence of individual characteristics, Exhibits 2, 4, and 5 were identified as having been fired from the same firearm. Due to differences of individual characteristics, Exhibits 2, 4, and 5 were excluded as having been fired from the same firearm as Exhibits 1 and 3.
GRYH6D	The bullet (item 3) recovered from the scene was fired in the same firearm as the known bullets (item 1). The recovered bullets (item 2 ,4 & 5) were fired in the same unknown firearm.
GT9HAK	Projectile B (Item 3) was identified as having been fired the in the same firearm as the known spent projectiles. Projectiles A, C and D (Items 2, 4 and 5) were fired in a second .40 S&W firearm. The specific brand of the suspect weapon is unknown at this time; however, any suspect weapon should be submitted to the laboratory for examination.
GTRX9G	Item 1 consists of three (3) .40 caliber/10mm jacketed bullets purportedly fired from a Springfield Armory (HS Produkt) pistol, Model XD-40. Item 2 through Item 5 consist of four (4) .40 caliber/10mm jacketed bullets. The Item 3 bullet was identified as having been fired from the same barrel as the Item 1 bullets. The Item 2, Item 4 and Item 5 bullets were identified as having been fired from the same barrel. A pattern examination of the Item 2, Item 4 and Item 5 bullets compared to the Item 1 bullets was inconclusive due to a lack of sufficient corresponding microscopic marks of value.

TABLE 2

WebCode	Conclusions
GU6Z8F	<p>Item 3 was identified microscopically as having been fired from the same firearm as the test fires reportedly from Item 1 based on agreement of the combination of individual characteristics and all discernible class characteristics. Items 2, 4, and 5 were identified microscopically as having been fired from the same unknown firearm based on agreement of the combination of individual characteristics and all discernible class characteristics. Items 2, 4, and 5 were microscopically eliminated as having been fired from the same firearm as the test fires reportedly from Item 1 due to disagreement of discernible individual characteristics. Visual and microscopic examination of Items 2, 4, and 5 revealed them to be 40 / 10mm caliber-class bullets fired from a firearm with a rifling pattern of six (6) lands and grooves with a right twist. Firearms with a similar rifling pattern include, but are not limited to, the following: Fabrique Nationale, Heckler &amp; Koch, Ruger, Sigarms, Springfield Armory, and Taurus brands of 40 S&amp;W semi-automatic pistols. The list of possible firearms was generated using an in-house expanded version of the General Rifling Characteristics Database created by the Federal Bureau of Investigation. This is not meant to be an all-inclusive list but rather an investigative aide, and any suspect firearm(s) of the appropriate caliber-class should be submitted for comparison; however, a complete list of the search results will be maintained in the case file. Current Integrated Ballistics Identification System (IBIS) / BrassTRAX technology in this laboratory is not capable of bullet imaging; therefore, no entry was made. All items of evidence are being returned.</p>
GZV9UU	<p>Exhibits 1 through 5 consist of seven (7) fired caliber .40 S&amp;W/10mm Auto full metal jacket copper bullets, which were fired from a barrel rifled with six (6) lands and grooves and a right twist. There exists agreement of all discernible class characteristics and sufficient agreement of individual characteristics to identify Exhibit 3 as having been fired from the same firearm as the reported Exhibit 1 test fired bullets. There exists agreement of all discernible class characteristics and sufficient agreement of individual characteristics to identify Exhibits 2, 4 and 5 as having been fired from the same firearm. Firearms that produce similar rifling characteristics are too numerous to list. There exists agreement of all discernible class characteristics between Exhibits 1 through 5; however, due to a difference in individual characteristics, Exhibits 2, 4 and 5 were excluded as being fired from the same firearm as the reported Exhibit 1 test fired bullets.</p>
HL9FLE	<p>Item 3 was identified as having been fired from the same firearm as the Item 1 fired bullets. Items 2, 4, and 5 were identified as having been fired from a different unknown firearm. Items 2, 4 and 5 are nominal 40 caliber bullets which were fired from a firearm having six lands and grooves with a right-hand twist. A list of firearms having the characteristics of Items 2, 4 and 5 will be electronically sent to the submitting officer. It should be noted that this list does not necessarily contain all firearms having the observed characteristics.</p>
HMFZ8T	<p>Items 1, 2, 3, 4 and 5: A microscopic comparison was conducted between Test bullets #1, 2 and 3 (Item 1) that was fired from Evidence Submission 001 and Items 2, 3, 4 and 5. The examinations determined that Item 3 was fired from the firearm, Evidence Submission 1 due to sufficient agreement between striations. The examinations determined that Items 2, 4 and 5 were fired from the same firearm due to a sufficient agreement between striations. Item 1 was found to have a disagreement of discernible class characteristics with Item 2; therefore, Items 1 and 3 were fired from a different firearm than Items 2, 4 and 5. Items 1, 2, 3, 4 and 5 will be forwarded to the Firearms Lab. Equipment used: Olympus SZX16 Comparison Microscope Serial #485128 Denver Balance Model TR 403 Serial #1116131</p>
HQEQKE	<p>1- The recovered firearm was used to fire (Item 3)First bullet recovered from the scene. 2- Item 2(Bullet recovered from the victim)and Item 4 and Item 5(bullet recovered from the scene were</p>

TABLE 2

WebCode	Conclusions
	firing by same guns and difference suspect's gun.
HVW8AR	The fired bullets in Submission #1a and Submission #1c were microscopically compared and identified as having been fired from the same unknown firearm based on sufficient agreement in individual characteristics present to conclude an identification. The fired bullets in Submissions #1b, #1d and #1e were microscopically compared and identified as having been fired from the same unknown firearm based on sufficient agreement in individual characteristics present to conclude an identification. The fired bullets in Submissions #1a and #1c were microscopically compared to the fired bullets in Submissions #1b, #1d and #1e and were eliminated as having been fired from the same unknown firearm based on sufficient difference in individual characteristics present.
HX3YZJ	Item 3 was identified as having been fired in the same firearm as Item 1 (test fires from a .40S&W Springfield Armory XD-40 pistol). Item 2, Item 4, and Item 5 were fired in a second .40 caliber firearm. Suspect weapons are unknown at this time; however, any suspect weapons should be submitted to the laboratory for analysis.
HYWH7R	Item 1 contains three (3) fired .40 caliber full-metal copper-jacketed bullets test fired from the known firearm that were microscopically compared to each other, and they were determined to contain reproducible individual markings. Items 2, 3, 4, and 5 are four (4) fired .40/10mm class caliber full-metal copper-jacketed bullets that were fired from barrels rifled with six (6) lands and grooves, right twist. Items 2, 3, 4, and 5 were microscopically compared to each other and to the known Item 1 bullets, and Item 3 was identified as having been fired from the same firearm as the known Item 1 bullets. Items 2, 4, and 5 were identified as having been fired from the same unknown firearm. These items were eliminated from being fired from the same firearm as the Item 1 and the Item 3 bullets due to significant and sufficient differences in individual characteristics. Firearms that produce rifling impressions like those found on the Items 2, 4, and 5 bullets include but are not limited to those provided in the GRC list that accompanies this report. Please note that this list is not all inclusive. [List not provided by participant]
J9C3DT	#1 & #3: These items were compared microscopically to each other. Based on the agreement of all discernible class characteristics and sufficient agreement of corresponding individual characteristics, Item #3 has been identified as having been fired from the same firearm as Item #1 test bullets. #2, #4, & #5: These fired bullets were compared microscopically to each other. Based on the agreement of all discernible class characteristics and sufficient agreement of corresponding individual characteristics, they have been identified as having been fired from the same firearm. These bullets were compared microscopically with Item #1 tests. There is agreement of all discernible class characteristics, but a sufficient disagreement of corresponding individual characteristics for an elimination. Item #2, #4, & #5 bullets have been eliminated as having been fired from the same firearm as Item #1 test bullets.
JFGPFU	Items 1 and 3 were microscopically intercompared, finding class and individual distinguishing characteristic correspondence. It was concluded that Items 1 and 3 were all fired by the same firearm (firearm not submitted). Items 2, 4, and 5 were microscopically intercompared, finding class and individual distinguishing characteristic correspondence. It was concluded that Items 2, 4, and 5 were all fired by the same firearm (firearm not submitted). Items 1 and 3 were microscopically compared to Items 2, 4, and 5 finding class characteristic correspondence. It was concluded that Items 1 and 3 could not be identified to nor excluded from having been fired by the same firearm as Items 2, 4, and 5. Variable reproduction, and potential subclass influence observed on Items 1, 2, 3, 4, and 5 were limiting factors in the analysis. It is possible the Items 1, 2, 3, 4, and 5 bullets were either fired by a single firearm or fired by two different

TABLE 2

WebCode	Conclusions
	firearms.
JJET9V	item 3 corresponds to item 1 (they were fired by the same firearm). items 2, 4 and 5 were fired by the same firearm (other than the one recovered).
JQUYTL	The first bullet recovered from the scene (Item 3) was fired by the Springfield XD-40 handgun. The bullet recovered from the victim (Item 2), second bullet recovered from the scene (Item 4), and the third bullet recovered from the scene (Item 5) were fired by a single firearm. It was not determined if Items 2, 4 or 5 were fired by the Springfield XD-40 handgun that fired Items 1 and 3 due to the agreement of all discernible class characteristics and disagreement of individual characteristics, but insufficient for an elimination; the results of these comparisons were inconclusive.
JRQ9AH	One of the fired bullets, Item 3, was identified as having been fired from the firearm used to generate Item 1. The remaining three fired bullets, Items 2, 4, and 5, were identified as having been fired from one firearm; however, they were eliminated as having been fired from the firearm used to generate Item 1 based on differences of individual characteristics. These bullets are most consistent with bullets commonly loaded in 40 S&W or 10mm Auto caliber cartridges. Manufacturers of firearms known to exhibit general rifling characteristics similar to Items 2, 4, and 5 include, but are not limited to, the following: 40 S&W – Astra, Beretta, Fabrique Nationale, FN/Browning, Heckler & Koch, Heritage, KSN Industries, Republic Arms, Ruger, Sigarms, Springfield Inc., Taurus, TNW Incorporated, and Walther and 10mm Auto – Heckler & Koch and Kriss USA.
JUVDTR	The bullet in Item 3 was discharged from the same barrel as the bullets in Item 1 based on an agreement of class and individual characteristics. The bullets in Items 2, 4 and 5 were not discharged from the same barrel as the bullets in Item 1 based on differences of individual characteristics.
JXBDYD	Item #3 was identified as having been fired from the item #1 pistol based upon sufficient agreement of individual characteristics. Items #2, #4, and #5 were identified as having been fired from the same unknown firearm based upon sufficient agreement of individual characteristics. (Unknown Firearm "A")
JXFQNU	The fired bullet, Item 3, was fired from the same firearm as the test fired bullets, Item 1, based on microscopic comparison and agreement of discernible class characteristics and sufficient matching individual detail. The fired bullets, Items 2, 4 and 5, were not fired from the same firearm as test fires, Item 1, based on microscopic comparison and significant disagreement of individual characteristics. The fired bullets, Items 2, 4 and 5, were fired from the same firearm based on microscopic comparison and agreement of discernible class characteristics and sufficient matching individual detail.
K77NUU	Items #1 and #3 were microscopically examined and compared. Based on the observed agreement of their class characteristics and sufficient agreement of their individual characteristics, Items #1 and #3 are identified as having been fired from the same firearm. Item #1 was microscopically examined and compared to Items #2, #4, and #5. Based on the observed disagreement of individual characteristics, Item #1 is eliminated as having been fired from the same firearm as Items #2, #4, and #5. Items #4 and #5 were microscopically examined and compared. Based on the observed agreement of their class characteristics and sufficient agreement of their individual characteristics, Items #4 and #5 are identified as having been fired from the same firearm. Item #2 was microscopically examined and compared to Items #4 and #5. There is observed agreement of their class characteristics. However, there is insufficient agreement or disagreement of their individual characteristics to

TABLE 2

WebCode	Conclusions
	either identify or eliminate the items as having been fired from the same firearm.
K8FM4G	The three test fired bullets from Item 1 have the same individual characteristic with the bullets from item 2-5 after making comparison using IBIS Matchpoint. This means, All bullets have been fired from the same weapon.
KDLFVR	Item 3 was fired in the same firearm as the item 1 test fires. Items 2, 4, and 5 were fired by a second firearm. Items 2, 4, and 5 are consistent with bullets from ammunition designated 40 S&W. A list of makes of firearms that may have fired these items includes, but is not limited to: ASTRA, FABRIQUE NATIONALE, FN/BROWNING, HECKLER & KOCH, HERITAGE, HI-POINT FIREARMS, KSN INDUSTRIES, REPUBLIC ARMS, RUGER, SPRINGFIELD INC., and TAURUS.
KEY4FR	A microscopic comparison was conducted between Test bullets #1 through #3, Item #1 and Items #2, #3, #4 and #5. The examinations determined that Item #3 was fired from the same firearm as Item #1 due to a sufficient agreement between striations. The examinations determined that Items #2, #4 and #5 were not fired from the same firearm as Item #1 due to a disagreement of individual characteristics. A microscopic comparison was conducted between Items #2, #4 and #5. The examinations determined that Items #2, #4 and #5 were fired from the same firearm due to a sufficient agreement between striations.
KFAKGQ	1. Ballistic match was indeed found between the known items recovered from the .40 S&W caliber Springfield XD-40 firearm with no visible serial number, and questioned bullet BP3 (Item 3). 2. Ballistic match was NOT found between the known items recovered from the .40 S&W caliber Springfield XD-40 firearm with no visible serial number, and questioned bullets BP2, BP4 and BP5 (Items 2, 4 and 5). 3. Unknown items BP2, BP4 and BP5 (Items 2, 4 and 5) were indeed fired from the same firearm.
KJRAR9	1. One of the recovered questioned bullets (Item 3) was identified to be fired in the same firearm as the known bullets (Item 1). 2. Three of the recovered questioned bullets (Item 2, 4, 5) were eliminated to be fired in the same firearm as the known bullets (Item 1). 3. Three of the recovered questioned bullets (Item 2, 4, 5) were identified to be fired in the same firearm.
KLXMGM	Comparison microscope examinations were conducted on the evidence listed above. The findings of this examiner are the following: 1). Exhibit 1.2 was fired from the same firearm used to produce the Item 1 test fires based on sufficient agreement of individual characteristics observed. 2). Exhibits 1.1, 1.3 and 1.4 were fired in one unknown .40 caliber firearm based on sufficient agreement of individual characteristics observed. 3). Exhibits 1.1, 1.3 and 1.4 were not fired from the same firearm as the Item 1 test fires based on differences in individual characteristics observed. No further analysis was conducted on the submitted evidence at this time.
KMQJ3A	Item 3 was fired in the same firearm as Item 1. This is also the opinion of Firearms Examiner [Name]. Items 2, 4, and 5 were fired in the same firearm. This is also the opinion of Firearms Examiner [Name]. Items 2, 4, and 5 were not fired in the same firearm as Item 1. This is also the opinion of Firearms Examiner [Name].
KPD8FV	Item 3 was identified as having been fired by the same firearm as Item 1. This identification is based on the agreement of class characteristics, and individual characteristics observed in the land engraved areas. Items 2 and 4 were identified as having been fired by the same firearm as Item 5. This identification is based on the agreement of class characteristics, and individual characteristics observed in the land engraved areas. Items 2, 4 & 5 were eliminated as having been fired by the same firearm as Item 1. This elimination is based on the disagreement of individual characteristics observed in the land engraved areas.

TABLE 2

WebCode	Conclusions
KR3AN6	The evidence in items 1 through 5 was analyzed by physical and microscopic examination. The four (4) bullets in items 2, 3, 4, and 5 were 40 caliber bullets which had been fired from the barrel of a weapon rifled with six (6) lands and grooves, right twist. The bullet in item 3 was determined to have been fired from the same weapon which fired the three (3) bullets in item 1. The three (3) bullets in items 2, 4, and 5 were determined not to have been fired from the weapon which fired the three (3) bullets in item 1. The three (3) bullets in items 2, 4, and 5 were fired from one weapon and further analysis is pending submission of another weapon for additional comparison. Item 1 was used for comparison.
KWX3JK	The reference projectiles, specimen #1, were microscopically compared to the copper jacketed projectiles, specimens #2 through #5. The following was determined: Specimen #3 was fired from the Springfield pistol, specimen #1. Specimens #2, #4, and #5 were fired from the same weapon; however, they were not fired from the Springfield pistol, specimen #1, due to differences in the individual striations.
KZWG7A	The bullet recovered from the scene (item 3) was fired in the recovered firearm Springfield XD-40. The bullet recovered from the victim (item 2) and the recovered bullets from the scene (item 4 and item 5) were fired in the same unknown firearm.
KZY7B8	a) The first bullet recovered from the scene (Item 3), was fired by the Springfield XD-40 handgun seized from suspect's vehicle. b) The bullet recovered from the victim (Item 2) and second and third bullets recovered from the scene (Item 4, Item 5), were not fired by the Springfield XD-40 handgun seized from suspect's vehicle.
L4AJNZ	Bullet Item3(X-2) was microscopically compared to firearm Item1(Pistol P-1) and an identification was made. Bullet Item3(X-2) was fired from firearm Item1(Pistol P-1). Bullet Item2(X-1), Item4(X-3) & Item5(X-4) were microscopically compared to fired bullets and an identification was made. Bullet Item2(X-1), Item4(X-3) & Item5(X-4) were fired from the same firearm.
LCPH3B	Item 001-03 was fired in the same firearm as Item 001-01 (identification). This is also the opinion of Firearms Examiner (name). Items 001-02, 001-04, and 001-05 were fired in the same firearm (identification). This is also the opinion of Firearms Examiner (name). Items 001-02, 001-04, and 001-05 were not fired in the same firearm as Item 001-01 (elimination). This is also the opinion of Firearms Examiner (name).
LKXUDM	Lab Items 1-5 were examined and microscopically compared between 11/8/2021 and 11/9/2021. No additional firearms were submitted. Based on agreement of all discernable class characteristics and sufficient agreement of individual characteristics, Lab Item 3 (one .40 caliber projectile) was positively identified as having been fired from Lab Item 1 (Springfield XD-40 pistol). Based on agreement of all discernable class characteristics and sufficient agreement of individual characteristics, Lab Item 2 (one .40 caliber projectile) was positively identified as having been fired from the same firearm as Lab Items 4 and 5 (two .40 caliber projectiles). Based on disagreement of class or individual characteristics, Lab Items 2, 4, and 5 (three .40 caliber projectiles) were eliminated as having been fired from Lab Item 1 (Springfield XD-40 pistol).
LNZVF6	1). The bullets identified E-1 to E-3, corresponding to item 1, and the bullet E-5, corresponding to the item 3, are .40/10mm caliber, with rifling to the right (R-6), and were fired by the same firearm (Identification). 2). The bullet identified E-4, corresponding to item 2, the bullet E-6, corresponding to the item 4, and the bullet E-7, corresponding to the item 5, are .40/10mm caliber, with rifling to the right (R-6), and were fired by the same firearm (Identification). The bullet identified E-4, corresponding to item 2, the bullet E-6, corresponding

TABLE 2

WebCode	Conclusions
	to the item 4, and the bullet E-7, corresponding to the item 5, were no not fired by the firearm used to fire the the bullets identified E-1 to E-3, corresponding to item 1, and E-5, corresponding to item 3 .
M7WHHN	All three of the submitted test fired bullets, item 1, were fired in the same firearm. The submitted bullet, item 3, was fired from the same firearm which fired the reportedly test fired bullets, item 1. The submitted bullets, items 2, 4, and 5, were fired in the same firearm. The identified submitted bullets, items 2, 4, and 5, were not fired from the same firearm which fired the submitted bullets, items 1 and 3.
MDYKTF	After microscopic examination of the test fired bullets (Item 1) and the fired questioned bullets (Items 2, 3, 4 & 5) the following determinations were made: Item 3 was fired from the recovered pistol Items 2, 4 & 5 were not fired from the recovered pistol Items 2, 4 & 5 were all fired from the same, unknown weapon capable of chambering and firing .40/10mm caliber ammunition and having a rifling system consisting of six (6) Lands & Grooves with a right twist.
MHAA2B	Items 1 and 3 were fired by the same firearm. Items 2, 4 and 5 were fired by the same firearm. In total there are 2 firearms.
MKUR39	[No Conclusions Reported.]
MLMBX3	One of the fired bullets (Item 3) was fired from the same barrel, or from a barrel with the same class characteristics made at or near the same time using the same tooling, as the known bullets (Item 1). The remaining three fired bullets (Items 2, 4, and 5) were not fired from the same barrel as the known bullets (Item 1). Items 2, 4, and 5 were fired from the same barrel, or from barrel(s) with the same class characteristics made at or near the same time on the same tooling, as each other.
MRV7LP	Items 2 through 5 have been examined and compared microscopically with the test fired bullets, Item 1 (knowns). Based on the observed agreement of their class characteristics and sufficient agreement of individual characteristics, Item 3 has been identified as having been fired from the same firearm as the tests, Item 1 (knowns). Based on a difference of individual characteristics Items 2 , 4 and 5 were not fired from the same firearm as the tests (Item 1). However, based on the observed agreement of their class characteristics and sufficient agreement of individual characteristics, Items 2, 4 and 5 are identified as having been fired from the same firearm but not the same as Items 1 and 3.
MU644D	I found sufficient agreement of individual marks between Item 3 and the test fired bullets Item 1 for identification. Conclusion: Item 3 and Item 1 were fired by the same firearm (the recovered Springfield XD firearm). I found sufficient agreement of individual marks between Items 2,4 and 5 for identification. Conclusion: Items 2,4 and 5 were fired by a single firearm. I found differences in individual marks between Items 2,4,5 and Items 1 and 3. In the absence of any alteration of barrel markings, differences in individual marks indicates that Items 2,4 and 5 were not fired by the same firearm that fired Items 1 and 3 (the recovered Springfield XD firearm).
MZ788P	1.1.1-1.1.3, 1.3 - These bullets were compared microscopically with each other. Based on the agreement of all discernible class characteristics and sufficient agreement of corresponding individual characteristics, they have been identified as having been fired from the same firearm. 1.2, 1.4, 1.5 - These bullets were compared microscopically with each other. Based on the agreement of all discernible class characteristics and sufficient agreement of corresponding individual characteristics, they have been identified as having been fired from the same firearm. These bullets were compared microscopically with 1.1.1-1.1.3 and 1.3. There is agreement of all discernible class characteristics, however there is sufficient disagreement of corresponding

TABLE 2

WebCode	Conclusions
	individual characteristics for an elimination. 1.2, 1.4, 1.5 have been eliminated as having been fired from the same firearm as 1.1.1-1.1.3, 1.3. These bullets bear general rifling (class) characteristics of six (6) grooves, right twist with dimensions known to be used in 40/10mm caliber class firearms manufactured and/or marketed by Astra, FN/Browning, Heckler & Koch, Heritage, KSN Industries, Republic Arms, Ruger, Springfield, and Taurus. However, since this list is not necessarily complete, any firearm that becomes suspect should be submitted to this laboratory for examination. 1.1-1.5 - Microscopic comparison of these items to the Laboratory's Open Case File upon request.
N6YKTE	The Item 3 bullet was Identified to the Item 1 bullets. The Item 2, 4 and 5 bullets were Identified to each other and Eliminated from the Item 1 and 3 bullets. The Item 2, 4 and 5 bullets are 40/10mm caliber class based on design features and they display rifling characteristics similar to firearms by numerous manufacturers.
NCXEGE	All samples received are in good and perfect condition.
NEJZ92	The hypothesis that the bullet "item 3" is fired by the recovered firearm (known – bullets "item 1") is very strongly supported. The hypothesis that the bullets "items 2, 4 and 5" are fired by the same firearm is very strongly supported.
NKPU4X	Visual and microscopic analyses of the evidence bullets and test fires from K1 were performed starting December 14, 2021 and the results of the comparisons and evaluations are as follows: Based on agreement of discernible class characteristics and sufficient agreement of individual characteristics, QB2 was identified as having been fired with K1. Based on significant disagreement of individual characteristics, QB1, QB3, and QB4 were eliminated as having been fired with K1. Based on agreement of discernible class characteristics and sufficient agreement of individual characteristics, QB3 and QB4 were identified as having been fired with the same unknown firearm. Based on agreement of class characteristics but insufficient agreement and/or disagreement of individual characteristics, QB1 could not be identified or eliminated as having been fired with the same unknown firearm as QB3 and QB4. QB1 does have marks of value and is suitable for comparison purposes. Should any additional suspect firearm(s) be recovered please submit and reference the above CC#. "Sufficient Agreement" exists between two toolmarks means that the agreement is of a quantity and quality that the likelihood another tool could have made the mark is so remote as to be considered a practical impossibility. Sufficient agreement is related to the significant duplication of random toolmarks as evidenced by a pattern or combination of patterns of surface contours. The evidence was analyzed 12/14, 12/16, and 12/17/2021. The evidence will be retained in the Firearms Analysis Unit's Firearms Evidence Vault.
NL4N27	1. First bullet recovered from the scene (Item 3) was fired in the same firearm as the known bullets (Item 1). Bullet recovered from the victim (Item 2), second bullet recovered from the scene (Item 4) and third bullet recovered from the scene (Item 5), were fired in the same firearm, but not in firearm as the known bullets (Item 1).
NP46K8	Questioned bullet, Item 3 was discharged from the same firearm as the known bullet, Item 1. I am unable to positively identify or eliminate questioned bullets, Item2, Item4 and Item5, as having been discharged from the same firearm as the known bullet, Item1.
NRCLEW	Bullet, B-2 (item #3) was microscopically compared to Test Fired Bullets, (known item #1) and an identification was made. Bullet, B-2 (item #3) and Test Fired Bullets (known #1) were fired from the same firearm. Bullets, B-1, B-3 & B-4 (items 2, 4 & 5) were microscopically compared to each other and were identified as having been fired from the same firearm, not submitted.

TABLE 2

WebCode	Conclusions
NT3H7C	Examined three specimens marked in the container marked #1. They are 40 S&W caliber discharged full metal jacketed test fired bullets. Examined the specimen marked #3. It weighs 179.9 grains and indicates six lands and grooves with a right hand twist. It is a 40 S&W caliber discharged full metal jacketed bullet. Examined the three specimens marked #2, #4, and #5. They weigh 179.2, 179.7, and 179.0 grains respectively and each indicates six lands and grooves with a right hand twist. They are 40 caliber class discharged full metal jacketed bullets. The bullet marked #3 was compared microscopically against #1 test fired bullets and identified as having been discharged from the same firearm. The three bullets marked #2, #4, and #5 were compared microscopically against each other and identified as having been discharged from the same firearm. The three bullets marked #2, #4, and #5 were compared microscopically against test bullets marked #1 and the bullet marked #3 and eliminated as having been discharged from the same firearm.
NUXWJB	Comparing the bullets according to those requested, it is established that the first bullet recovered at the scene was fired with the same firearm that fires the bullets listed in item 1.
P3N7F6	A microscopic comparison was performed between the test fired bullets from the recovered firearm and the recovered fired bullets 2, 3, 4 and 5. From the general firing marks present and fine detail within these marks, we are of the opinion that fired bullet 3 was discharged from the same firearm as the test fires i.e. the recovered Springfield XD-40 pistol. Fired bullets 2, 4 and 5 were NOT fired from the recovered XD-40 pistol, however, they have been discharged from the same firearm i.e. at least two firearms have been discharged at the scene.
P3P2YB	All four evidence fired bullets are consistent with .40 S&W caliber projectiles. They each have the same class characteristics as the test set #1. The fired bullet (item 3) exhibits significant matching microscopic detail to the reproducible stria observed on bullets in set 1. The agreement is consistent with sample #3 originate from the same source as set 1.
P9V3D7	After comparing the bullets received for study, it was established that the bullets the ITEM 2, 4 and 5 were fired by the same firearm. Bullet item 3 was fired from a Springfield XD-40 handgun seized in the vehicle.
PD8LJ8	Examined the four specimens marked #2, #3, #4, and #5. They weigh 179.4, 179.9, 179.7, and 179.3 grains, respectively, and each indicates six lands and six grooves with a right hand twist. They are 40 caliber class discharged full metal jacketed bullets. The bullet marked #3 was microscopically compared to test standards and identified as having been discharged from the Springfield XD-40 handgun. The three bullets marked #2, #4, and #5 were microscopically compared to each other and identified as having been discharged from the same firearm. The three bullets marked #2, #4, and #5 were microscopically compared to test standards and eliminated as having been discharged from the Springfield XD-40 handgun.
PK8Z69	exhibits Q(2,3,4,5) were identified to be fired from the same firearm that fired Q(1).
PMF7QA	CONCLUSION: 1). Item 3 was identified within the limits of practical certainty as having been fired from the same firearm as item 1. 2). Items 2, 4 & 5 were eliminated as having been fired from the firearm that fired item 1. 3). Items 4 and 5 were identified within the limits of practical certainty as having been fired from the same firearm.
PPHJG3	The microscopic tool marks on the Item # 1 (test bullets) and Item # 3 are agreed with each other. Hence fired bullets Item # 1 and Item # 3 were fired from the same firearm. The microscopic tool marks on the Item # 1 (test bullets) are disagreed with the microscopic tool marks on the item # 2, Item # 4 and Item #5. Hence fired bullets item # 2, Item # 4 and Item #5 were not fired from the firearm that has been used to get the item # 1 (test bullets)

TABLE 2

WebCode	Conclusions
PRA3DF	1. Items 1 – 5 were all visually examined and microscopically compared to each other with the following results. 2. Exhibit 1 was compared to the Exhibit 3 fired bullet and presented an agreement of all discernable class characteristics and sufficient agreement of individual characteristics. Therefore, Exhibit 3 was identified as having been fired from the same firearm as Exhibit 1. 3. Physical examination and microscopic comparison of Exhibit 1 to Exhibits 2, 4 and 5 revealed they were not fired from the Exhibit 1 firearm. When compared, Exhibits 2, 4 and 5 presented significant disagreement of individual characteristics. Therefore, Exhibits 2, 4 and 5 were eliminated as having been fired from the same firearm as Exhibit 1. 4. When compared, Exhibits 2, 4 and 5 presented an agreement of all discernable class characteristics and sufficient agreement of individual characteristics. Therefore, Exhibits 2, 4 and 5 were identified as having been fired in the same firearm (not submitted).
PVPMCN	Item 1 known standards and Item 3 questioned bullet were fired through the same gun barrel. Items 2, 4 and 5 questioned bullets were all fired through the same gun barrel and a gun barrel different than the one that fired Items 1 and 3.
PY8WBD	Laboratory Item #001.C (agency item 3), fired full metal jacket bullet recovered from the scene is identified as being fired by the same firearm as Laboratory Item #001.A (agency item 1), test fires from Springfield XD-40, 40 caliber semiautomatic pistol. Laboratory Items #001.B (agency item 2), 001.D (agency item 4) and 001.E (agency item 5), fired full metal jacket bullets are inconclusive as being fired by the same firearm as Laboratory Item #001.A (agency item 1), test fires from Springfield XD-40, 40 caliber semiautomatic pistol. An inconclusive finding resulted from agreement of all discernable class characteristics, and some disagreement of individual characteristics, but insufficient for an elimination. Laboratory Items #001.B (agency item 2), 001.D (agency item 4) and 001.E (agency item 5), fired full metal jacket bullets are identified as being fired by the same firearm.
PYVTL	Item 1 consist of three (3) fired .40/10mm class caliber full metal copper-jacketed bullets that were submitted as known evidence (suspect firearm). The Item 1 bullets were marked 1A, 1B and 1C to differentiate them during examination. Items 2, 3, 4 and 5 are four (4) fired .40/10mm class caliber full metal copper-jacketed bullets. When microscopically compared, the Item 3 bullet was identified as having been fired from the same firearm as the Item 1 bullets. When microscopically compared, the Items 2, 4 and 5 bullets were identified as having been fired from the same firearm rifled with six (6) lands and grooves, right twist. Firearms that produce rifling characteristics like those exhibited on the Item 2 bullet (that collectively represents the Items 2, 4 and 5 bullets) are included in the FBI's General Rifling Characteristics list that will accompany this report. The provided list is not all inclusive. Items 2, 4 and 5 bullets were eliminated as having been fired from the same firearm as the suspect firearm and the Item 3 bullet due to a significant disagreement of discernible individual characteristics. [List not provided by participant]
Q2QDV7	Items 2, 3, 4, and 5 are all 40/10mm caliber bullets that were each fired from a firearm having conventional style rifling consisting of six lands and grooves with right twist. These bullets are consistent with those known to be loaded into 40 S&W and 10mm Auto caliber cartridge cases. These four items were microscopically compared to test fired bullets (item 1) said to have been fired by a recovered Springfield 40 S&W caliber model XD-40 pistol. The item 1 test fired bullets were fired by a firearm that has conventional rifling consisting of six lands and grooves with right twist. Based upon the agreement of class characteristics, items 2, 3, 4, and 5 were microscopically compared to the test fired bullets (item 1). Based on the sufficient agreement of individual characteristics, item 3 was identified as having been fired by the same gun that fired the item 1 test fired bullets. Based on the significant disagreement in individual characteristics, item 2, 4, and 5 were eliminated as having been fired by the same

TABLE 2

WebCode	Conclusions
	<p>gun that fired the item 1 test fired bullets. Based on the sufficient agreement of individual characteristics, items 2, 4 and 5 were identified as having been fired by the same unknown firearm. Common firearms with similar class characteristics, in 40 S&amp;W caliber, as items 2, 4, and 5 include models produced by Astra, Beretta, CZ, FN/Browning, Heckler &amp; Koch, Ruger, Sigarms, Springfield, Taurus and Walther. Common firearms with similar class characteristics, in 10mm Auto caliber, as items 2, 4, and 5 include models produced by Heckler &amp; Koch. These are not meant to be all-inclusive lists; therefore, all 40 S&amp;W and 10mm Auto caliber firearms recovered during this investigation should be submitted along with items 2, 4, and 5 for microscopic comparison. An identification conclusion is made when there is agreement of all discernible class characteristics and sufficient agreement of a combination of individual characteristics where the extent of the agreement exceeds that which can occur in the comparison of toolmarks made by different tools and is consistent with the agreement demonstrated by toolmarks known to have been produced by the same tool. An elimination conclusion is made when there is significant disagreement of discernible class characteristics and/or individual characteristics. The above interpretations of the results of analysis are the opinion of this laboratory.</p>
QJ8J6G	<p>By means of microscopic comparison, the bullets, (items 1.1 and 1.3) were identified as having been fired from the same firearm. This qualitative identification is based on the agreement of all discernible class and sufficient agreement of individual characteristics. By means of microscopic comparison, the bullets, (items 1.2, 1.4 and 1.5) were identified as having been fired from a second firearm. This qualitative identification is based on the agreement of all discernible class and sufficient agreement of individual characteristics.</p>
QRM4Q2	<p>The questioned bullet identified Item 3 were fired using the firearm identified Item 1 (Springfield XD-40 handgun). The questioned bullets identified Item 2, Item 4 and Item 5 were not fired using the firearm identified Item 1 (Springfield XD-40 handgun).</p>
QVHUVR	<p>The Item 1 and 3 bullets are identified as having been fired in the same firearm. The Item 2, 4 and 5 bullets are identified as having been fired in the same unknown firearm. They are eliminated as having been fired in the same firearm as the Item 1 and 3 bullets.</p>
QZV62N	<p>[No Conclusions Reported.]</p>
RC3ZKW	<p>The evidence in items 1 through 5 was analyzed by physical and microscopic examination. The bullet in item 3 was determined to have been fired from the same weapon as the three known bullets in item 1. The three bullets in items 2, 4, and 5 were determined not to have been fired from the same weapon as the three known bullets in item 1. The three bullets in items 2, 4, and 5 were 40 caliber bullets which had been fired from the barrel of a weapon rifled with six lands and grooves, right twist. The three bullets in items 2, 4, and 5 were fired from one weapon. Further analysis is pending submission of a weapon for additional comparison. Item 1 was used for comparison.</p>
REFECC	<p>In my opinion, item 3 was fired in the same gun as the bullets in item 1. In my opinion, items 2, 4 and 5 were not fired in the same gun as the bullets in item 1.</p>
RMKMRC	<p>The Item 3 bullet was fired in the same firearm as the known bullets (Item 1).</p>
RYLLK	<p>Item 3 was fired in the same firearm as the item 1 test-fires. Items 2, 4, and 5 were fired in a second firearm. Items 2, 4, and 5 are consistent with bullets from ammunition designated 40 S&amp;W or 10mm Auto. A list of makes of firearms that may have fired these items includes, but is not limited to: Astra, Beretta, Fabrique Nationale, FN/Browning, Heckler &amp; Koch, Heritage, KSN Industries, Republic Arms, Ruger, Sigarms, Springfield INC and Taurus.</p>

TABLE 2

WebCode	Conclusions
TBB7K8	[No Conclusions Reported.]
TCLBUP	The item 3 bullet is identified as having been fired in the same firearm as the item 1A, 1B, and 1C bullets. The item 2, 4, and 5 bullets are identified as having been fired in the same unknown firearm. The item 2, 4, and 5 bullets are eliminated as having been fired in the same firearm as the item 1A, 1B, 1C, and 3 bullets.
TDHEVD	1). Exhibit 1 consists of three fired .40 caliber class projectiles normally loaded into a .40 S&W caliber cartridge. Exhibit 1 was provided by the submitter described as test fires. 2). Exhibits 2 through 5 each consists of one fired .40 caliber class projectile normally loaded into a .40 S&W caliber cartridge. 3). Microscopic comparison revealed: a). Exhibits 1 and 3 were fired from the same firearm due to agreement of class characteristics and sufficient agreement of individual characteristics. b). Exhibits 2, 4, and 5 were fired from the same firearm due to agreement of class characteristics and sufficient agreement of individual characteristics. c). Exhibits 1 and 3 were not fired from the same firearm as Exhibits 2, 3, and 4 due to an agreement of class characteristics and sufficient disagreement of individual characteristics. Observing this amount of disagreement from the same source is considered extremely remote. TECHNICAL NOTES: Class characteristics are defined as measurable features of a firearm/tool which indicate a restricted group source. They result from design features and are determined prior to manufacture of the firearm/tool. Individual characteristics are defined as marks produced by the random imperfections or irregularities of firearm/tool surfaces. These random imperfections or irregularities are produced incidental to manufacture and/or caused by use, corrosion, or damage, and are unique to that specific tool. Any conclusions indicating that a toolmark was made by a specific firearm/tool are not to the absolute exclusion of all other firearms/tools because it is not feasible to examine all possible firearms/tools. However, observing this amount of agreement from a different source is considered extremely remote.
TETWZX	A micro-comparison test was performed using test Item 1 against items 2, 3, 4 and 5. The results are the following: When comparing fired bullets identified as ITEM 1 against fired bullet identified as ITEM 3, the conclusion is a positive identification, which means these bullets were fired by the same firearm. When comparing fired bullets identified as ITEM 1 against fired bullet identified as ITEM 2, 4 and 5, the conclusion is elimination, which means these three bullets were not fired by the firearm that fired bullets identified as ITEM 1.
TJ2RNK	The fired bullet, item #3, was microscopically identified as having been fired from the same firearm that fired the test fired bullets, item 1. The fired bullets, items #2, 4 and 5, were microscopically identified as having been fired from the same unknown firearm. These bullets were microscopically eliminated from the test fired bullets, item 1, and fired bullet, item 3 due to differences in individual characteristics.
TKCTBJ	Item 3 was fired in the same firearm as the item 1 test fires. Items 2, 4 and 5 were fired in a second firearm. Items 2, 4 and 5 are consistent with bullets from ammunition designated 40 S&W. A list of makes of firearms that may have fired these items includes, but is not limited to: Heckler & Koch, Ruger, Springfield Inc. and Taurus.
TRD2ZK	A: The spent projectile mentioned above as Item 1-3 was fired from the seized .40 S&W caliber, Springfield Armory pistol, that produced the test firings described above as Item 1-1 (A, B, & C). B: The spent projectiles mentioned above as Item 1-2, Item 1-4, and Item 1-5 were all fired from the same unknown .40 S&W caliber weapon capable of chambering and firing .40 S&W caliber ammunition having a general rifling system consisting of Six (6) lands and Six (6) grooves with a right hand twist.
TUJWQW	(Assuming no subclass characteristics) Item 3 was fired in the same firearm as item 1. Items 2,

TABLE 2

WebCode	Conclusions
	4, and 5 were not fired in the same firearm as item 1. Items 2, 4, and 5 were fired in the same firearm.
TULQ8H	CONCLUSIONS: FROM THE WITNESS ELEMENTS (3) THREE BULLETS MARKED AS 1 DESCRIBED AS BT1A-BT1C, OBTAINED FROM THE SHOT TEST OF THE FIREARM TYPE GUN CALIBER.40 S&W, SPRINGFIELD BRAND, MODEL XD-40. THE FOLLOWIING IS DETERMINED: 1. THEY PRESENT BALLISTIC CORRELATION WITH (01) ONE BULLET PROBLEM DESCRIBED AS BP3, RELATED WITH THE CASE NUMBER 0201-2021-ENS21. FROM (01) BULLET PROBLEM MARKED AS NUMBER 2 CLUE / HINT/EVIDENCE , THE FOLLOWING IS DETERMINED: 1.- IT PRESENTS BALLISTIC CORRELATION WITH (2) TWO BULLET PROBLEM DESCRIBED AS BP4 Y BP5, RELATED WITH THE CASE NUMBER 0201-2021-ENS.21
TVCEJ3	Item 3 was identified microscopically as having been fired from the same firearm that reportedly fired the Item 1 test fires based on agreement of the combination of individual characteristics and all discernible class characteristics. Items 2, 4 and 5 were identified microscopically as having been fired from the same unknown firearm based on agreement of the combination of individual characteristics and all discernible class characteristics. Items 2, 4 and 5 were microscopically eliminated as having been fired from the same firearm that reportedly fired the Item 1 test fires due to disagreement of individual characteristics.
TWQNR4	Part I: Examined the three specimens marked #1. They weigh 179.9, 180.0, 178.7 grains respectively, and each indicates six lands and six grooves with a right hand twist. They are each a 40 caliber class discharged full metal jacketed bullet, listed as test fires from a 40 S&W caliber Springfield Armory model XD-40 semiautomatic pistol. Examined the specimen marked #3. It weighs 179.7 grains and indicates six lands and six grooves with a right hand twist. It is a 40 caliber class discharged full metal jacketed bullet. The bullet marked #3 was microscopically compared against the bullets marked #1 and identified as having been discharged from the same firearm. Part II: Examined the three specimens marked #2, #4, and #5. They weigh 179.9, 178.9, and 180.2 grains respectively, and each indicates six lands and six grooves with a right hand twist. They are each a 40 caliber class discharged full metal jacketed bullets. The three bullets marked #2, #4, and #5 were microscopically compared and identified as having been discharged from the same firearm. The three bullets marked #2, #4, and #5 were microscopically compared against the three bullets marked #1 and were eliminated as having been discharged from the same firearm.
U2FNJ4	The Bullet items 2,4 and 5 were not fired in the same firearm as item 1. The findings provided strong support for the proposition that the bullet item 3 was fired in the same firearm as item 1, rather than some other firearm. The findings provide moderately strong support for the proposition that the bullet items 2,4 and 5 were fired from the same firearm as each other rather than from different firearms.
U7AMUT	Items 1,3 The bullets were identified as having been fired from the same firearm, based on sufficient agreement of individual characteristics. The bullets were determined to be of 40 caliber displaying rifling characteristics of 6 land s and grooves, right-hand twist. Items 2, 4, 5 The bullets were identified as having been fired from the same firearm, based on sufficient agreement of individual characteristics. The bullets were fired from a different firearm than Items 1 and 3. The bullets were determined to be of 40/10mm caliber displaying rifling characteristics of 6 land s and grooves, right-hand twist.
UCKZTZ	ONCE THE PHYSICAL AND MICROSCOPIC STUDY OF THE ITEMS NUMBERED AS ITEM 1, ITEM 2, ITEM 3, ITEM 4 AND ITEM 5, AND IN ADDITION TO THE CLASS CHARACTERISTICS SUCH AS THE NUMBER OF LANDS AND GROOVES, THE TWIST, AND THE WIDTH, THE

TABLE 2

WebCode	Conclusions
	<p>FOLLOWING IS DETERMINED: 1: ITEM 1, ITEM 2, ITEM 3, ITEM 4 AND ITEM 5, IS IDENTIFIED TO BULLETS FIRED BY A FIREARM WITH A CONVENTIONAL RIFLING BARREL, AND BELONG TO THE .40 S&amp;W CALIBER. 2: ACCORDING TO THE INDIVIDUAL CHARACTERISTICS OBTAINED IN EACH OF THE BULLETS ANALYZED, IT IS DETERMINED THAT THERE IS A SUFFICIENT AGREEMENT BETWEEN ITEM 1 AND ITEM 3 AND ACCORDING TO THE ANALYSIS PERFORMED, THEY WERE FIRED FROM THE SAME FIREARM.</p>
UJC9X4	<p>The bullet identified as item "3" was fired by the same firearm that fired the bullets identified as item "1". The bullets identified as items "2, 4, 5" were not fired by the same firearm that fired the bullets identified as item "1".</p>
UKFNJG	<p>Examinations showed that Item 2 was not discharged from the same firearm as Item 1. Examinations showed that Item 3 was discharged from the same firearm as Item 1. Examinations showed that Item 4 was not discharged from the same firearm as Item 1. Examinations showed that Item 5 was not discharged from the same firearm as Item 1.</p>
ULMH43	<p>Item 003 was microscopically compared to Item 001 and was identified as having been fired from the same firearm that fired Item 001 (said to have been fired from a Springfield XD-40 pistol) based on the correspondence of all discernible class characteristics and sufficient agreement of individual characteristics. Items 002, 004 and 005 were microscopically compared to each other and were identified as having been fired from the same unknown firearm based on the correspondence of all discernible class characteristics and sufficient agreement of individual characteristics. Items 002, 004 and 005 were microscopically compared to Items 001 and 003 and could neither be identified nor eliminated as having been fired from the same firearm due to the correspondence of all discernible class characteristics and some disagreement of individual characteristics, but insufficient for an elimination. The class characteristics of Items 002, 004 and 005 were searched through the General Rifling Characteristics (GRC) database to generate a list of firearms that could have fired Items 002, 004 and 005. The results include, but are not limited to, the following: Beretta, Ruger, Sig Arms, Springfield Inc., Taurus and Walther. This list is not meant to be all-inclusive, but rather an investigative aid. Any suspect firearm(s) of the appropriate caliber-class should be submitted for comparison. A complete list of the search results will be maintained in the case record.</p>
UMGUW2	<p>The Item 1 and Item 3 bullets was microscopically compared to one another with POSITIVE RESULTS. Based on sufficient agreement of individual characteristics, the four bullets were fired through the same firearm barrel. The Item 2, Item 4, and Item 5 bullets were microscopically compared to one another with POSITIVE RESULTS. Based on sufficient agreement of individual characteristics, the three bullets were fired through the same firearm barrel. The Item 2, Item 4, and Item 5 bullets were microscopically compared to the Item 1 and Item 3 bullets with NEGATIVE RESULTS. Based on sufficient disagreement of individual characteristics, the two groups of bullets were not fired through the same firearm barrel.</p>
URABEG	<p>THREE WITNESS BULLETS OBTAINED FROM THE S&amp;W .40 CALIBER PISTOL FIREARM, BRAND SPRINGFIELD, MODEL XD-40 (BULLETS ITEM 1) PRESENT BALLISTIC CORRELATION WITH THE BULLET PROBLEM ITEM 3. THREE WITNESS BULLETS OBTAINED FROM THE .40 CALIBER S&amp;W PISTOL FIREARM, BRAND SPRINGFIELD, MODEL XD-40 (BULLETS ITEM 1) DO NOT PRESENT BALLISTIC CORRELATION WITH THE BULLETS PROBLEM ITEM 2, ITEM 4, ITEM 5.</p>
UU3YYX	<p>Item 1 contains three (3) .40 caliber (10mm) bullets reported to have been test fired from a .40 S&amp;W caliber Springfield pistol, Model XD-40. Item 2 through 5 are .40 caliber (10mm) copper full metal jacket bullets that were fired from a rifled barrel with six grooves, right twist. A pattern</p>

TABLE 2

WebCode	Conclusions
	examination of toolmarks present on the Item 3 bullet identified it as having been fired from the barrel of the Item 1 pistol. A pattern examination of toolmarks present on the Item 2, 4, and 5 bullets identified them as having been fired from the same barrel. However, due to a lack of sufficient corresponding microscopic marks of value, the Item 2, 4, and 5 bullets were inconclusive with the Item 3 bullet and Item 1 pistol.
UXFCN4	The submitted item #3 was microscopically compared to the test fire item #1 and were positively identified as having been fired in the same firearm.
V6X8ZR	The known three bullets Item 1 and the questioned bullet Item 3 have the same class characteristics and matching individual characteristics, so it is undoubtedly proved, that the bullet Item 3 were fired in the same firearm as the known bullets Item 1. The known bullets Item 1 and the questioned bullets Item 2, Item 4 and Item 5 have the same class characteristic but different individual characteristics, so it is undoubtedly proved, that the bullets Item 2, Item 4 and Item 5 were not fired in the same firearm as the known bullets Item 1. The questioned bullets Item 2, Item 4 and Item 5 have the same class characteristics and matching individual characteristics, so it is undoubtedly proved, that these bullets were fired in the same firearm.
VDMKRJ	1.- Identification between the known bullets item 1 with bullet item number 3. 2.- Elimination between known bullets item number 1 with bullets item number 2, 4 and 5.
VK9D76	The .40 caliber bullet from item 3 recovered from the victim was fired from the Springfield XD-40 pistol (Item No. 1).
VT3WRK	Item 3 was fired in the same firearm as the item 1 test fires. Items 2, 4, and 5 were fired in a second firearm. Items 2, 4, and 5 are consistent with bullets from ammunition designated 40 S&W or 10mm Auto. A list of makes of firearms which are common to the LAPD region and may have fired each of these items includes, but is not limited to: FMBUS / Glock Aftermarket, Springfield Inc., Taurus, Ruger, Heckler & Koch, Beretta, Sig Sauer, Fabrique Nationale and Walther.
VWFVLQ	Microscopic comparison examinations were conducted between QB-1 through QB-4 and test bullets fired from K-1 (Springfield XD-40), resulting in the conclusions: QB-2 was fired from K-1. This conclusion was based on a correspondence of all class characteristics and sufficient agreement of individual characteristics. QB-1, QB-3, and QB-4 were fired from a second firearm, firearm unknown. This conclusion was based on a correspondence of all class characteristics and sufficient agreement of individual characteristics. QB-1, QB-3 and QB-4 were not fired from K-1. This conclusion was based on sufficient disagreement of individual characteristics.
VYQREB	The expended bullets contained in laboratory evidence items 1 (laboratory designated as items 1.1-1.5) were microscopically compared to each other with the following results. The expended bullets contained in laboratory items 1.1 and 1.3 were all identified as having been fired from the same firearm. Due to a difference in individual characteristics, the bullets designated as 1.2, 1.4 and 1.5 were excluded as having been fired from the same firearm as 1.1 and 1.3. The expended bullets contained in laboratory evidence items 1.2, 1.4 and 1.5 were microscopically compared to each other with the following results. The expended bullets contained in laboratory items 1.2, 1.4, and 1.5 were all identified as having been fired from the same firearm. Laboratory evidence items 1.2, 1.4, and 1.5 are consistent with a 40 caliber bullet having 6 lands and grooves and a right hand twist. Manufactures that produce firearms with these same general rifling characteristics include but are not limited to Astra, Beretta, Ruger, Springfield, and Taurus. This is not meant to be an all-inclusive list; therefore all 40 caliber firearms encountered during the course of this investigation should be submitted for

TABLE 2

WebCode	Conclusions
	comparative examination.
W37J64	<p>Item 1 consisted of three fired .40 S&amp;W bullets, fired through a barrel with conventional right twist rifling of six lands and grooves. They were reportedly fired by a Springfield XD-40 pistol. They were arbitrarily labeled as 1A, 1B, and 1C for examination purposes. The bullets were microscopically intercompared and found to have sufficient reproducibility of individual detail. Item 3 was a fired .40 S&amp;W bullet, fired through a barrel with conventional right twist rifling of six lands and grooves. Item 3 was compared to Item 1A using a comparison microscope. Corresponding class characteristics and individual detail sufficient for an identification were observed. Item 3 was fired by the Springfield XD-40 pistol. Items 2, 4, and 5 consisted of three fired .40 S&amp;W bullets. Each was fired through a barrel with conventional right twist rifling of six lands and grooves. Items 2, 4, and 5 were compared to each other using a comparison microscope. Corresponding class characteristics and individual detail sufficient for an identification were observed. Items 2, 4, and 5 were fired by the same firearm. Items 2, 4, and 5 were compared to Items 1A, 1B, and 1C using a comparison microscope. Class characteristics corresponded; however, significant differences of individual detail was observed to conclude that Items 2, 4, and 5 were not fired by the Springfield XD-40 pistol.</p>
W7K44C	<p>Item A1-1 was compared to item A1-3. The Item A1-3 bullet was compared microscopically and identified as having been fired from the same firearm as Item A1-1. No firearm was submitted. Identifications are based on sufficient agreement of the individual characteristics of tool marks. Sufficient agreement, in part, means that the likelihood of another tool producing the same marks is so remote that it is considered a practical impossibility. Item A1-1 was compared to items A1-2, A1-4 and A1-5. Examination of the Items A1-2, A1-4, and A1-5 revealed them to exhibit the same general rifling class characteristics as those produced by the same firearm that produced Item A1-1 (known bullets); however, because of the lack of sufficient suitable corresponding microscopic markings, it was not possible to identify or eliminate the Items A1-2, A1-4, and A1-5 bullets as having been fired from the same firearm as Item A1-1. No firearm was submitted.</p>
W82BBE	<p>Items 2, 3, 4, 5: A microscopic comparison was conducted between Test bullet # A, Item 1 that was fired from the recovered firearm and Items 2, 3, 4 and 5. The examinations determined that Item 3 was fired from the recovered firearm, due to a sufficient agreement between striations. The examinations determined that Items 2, 4 and 5 were not fired from the firearm, Item 1, due to a disagreement of individual characteristics. A microscopic comparison was conducted between Items 2, 4 and 5. The examinations determined that Items 2, 4 and 5 were fired from the same firearm due to a sufficient agreement between striations. Disposition: The above listed evidence will be forwarded to the Property Custody Section. All firearm comparison examinations were conducted using the AFTE's (Association of Firearm &amp; Tool Mark Examiners) Theory of Identification. Identifications are the opinion of a qualified examiner that two tool marks were made by the same tool based on sufficient agreement of individual characteristics. The agreement of individual characteristics is of a quantity and quality that the likelihood another (different) tool could have made the mark is so remote as to be considered a practical impossibility. All exclusions and inconclusive findings were based upon exemplars available at the time of the examinations.</p>
W993B3	<p>The items 2, 3, 4 and 5 bullet, were compared microscopically to items. To items one (1) test and the item 3 was fired from the same as item 1. The items 4 y 5 was fired from a second firearm, the item 2 was fired from a third firearm, different from the previous one.</p>
WDN8VV	<p>Item 3 had been fired out of the same barrel than Item 1. Items 2, 4 and 5 had been fired out of another barrel than Item 1.</p>

TABLE 2

WebCode	Conclusions
WFBNA4	<p>The fired bullet, item 1.3, was identified as having been fired in the Springfield pistol, item 1.1. The three (3) fired bullets, items 1.2, 1.4, and 1.5, were consistent in all observable class characteristics (caliber, number and widths of lands and grooves, rifling, twist) as the Springfield pistol, item 1.1. While there is some disagreement of microscopic markings, the markings present are insufficient for an elimination. The results are inconclusive. The three (3) fired bullets, items 1.2, 1.4, and 1.5, were identified as having been fired in the same firearm. Note: Identifications are based on the agreement of all discernible class characteristics and agreement of corresponding individual microscopic markings.</p>
WG2F9G	<p>THE QUESTIONED BULLETS (ITEMS 2-5) WERE FIRED BY THE SAME WEAPON. BUT NOT CORRESPONDING TO THE SEIZED WEAPON. THE WITNESS BULLETS OBTAINED FROM THE SEIZED WEAPON (ITEM 1), YES CORRESPONDING TO THE SAME CALIBER OF THE PROBLEM BULLETS (ITEMS 2-5, THE RECOVERED FROM THE VICTIM BY THE FORENSIC DOCTOR, AND THE 3 PROBLEM BULLETS RECOVERED FROM THE SCENE BY THE INVESTIGATOR) . BUT THE SEIZED WEAPON IS NOT THE ONE THAT FIRED THE PROBLEM BULLETS (ITEM 2-5).</p>
WGNA47	<p>Through the use of microscopic comparisons, it was determined that one bullet (Item 3) WAS FIRED from the Springfield XD-40 handgun (Item 1). Through the use of microscopic comparisons, it was determined that three bullets (Items 2, 4, 5) were not fired from the Springfield XD-40 hand gun, but were all fired from the same firearm.</p>
WQ8U39	<p>Item(s) 1.1,1.2,1.3,1.4 &amp; 1.5: The expended bullets were originally components of 40 class caliber cartridges that had been fired in a barrel(s) with 6 lands and grooves of conventional style rifling with a right hand twist. Microscopic examination and comparison revealed the following: Item 1.3 was fired from the same firearm that fired the known tests Item 1.1, based on the observed agreement of their class characteristics and sufficient agreement of their individual characteristics. Items 1.2, 1.4, and 1.5 are eliminated as having been fired in the same firearm that fired the known test Item 1.1, based on the observed disagreement of individual characteristics. Items 1.2, 1.4 and 1.5 were fired from the same firearm, based on the observed agreement of their class characteristics and sufficient agreement of their individual characteristics.</p>
WR66YB	<p>The Item 3 fired bullet was fired from the same firearm that fired the known test fired bullets, Item 1. This identification is based on sufficient agreement of the combination of individual characteristics and all discernible class characteristics. The Items 2, 4, and 5 fired bullets were fired from the same unknown firearm. These identifications are based on sufficient agreement of the combination of individual characteristics and all discernible class characteristics. The Items 2, 4, and 5 fired bullets were not fired from the same firearm that fired the known test fired bullets, Item 1. These eliminations are based on differences observed in the individual characteristics. Due Items 2, 4, and 5 being identified as being fired from the same unknown firearm, only Item 2 was used for the General Rifling Characteristics search. Item 2 is a 40 caliber family fired bullet having conventional rifling with 6 land and groove impressions and a right hand twist. An Association of Firearm and Tool Mark Examiners (AFTE) General Rifling Characteristics Database search of possible firearms that could have fired Item 2 is attached. Note: The attached GRC search may not be all-inclusive; any recovered firearms of the appropriate caliber-class may be submitted to the laboratory for comparison purposes. [Attachment not provided by participant]</p>
WWYW9T	<p>I microscopically compared Items 2, 4, and 5 to Item 1B. I eliminated Items 2, 4, and 5 as being fired in the same firearm as Items 1A, 1B, and 1C based on significant disagreement of individual characteristics within the land impressions. Items 2, 4, and 5 were fired in a second</p>

TABLE 2

WebCode	Conclusions
	<p>firearm. Items 2, 4, and 5 are 40 caliber bullets with six lands and grooves and a right twist. The manufacturers of firearms that may have fired Items 2, 4, and 5 include Astra, Beretta, Fabrique Nationale, FN/Browning, Heckler &amp; Koch, Heritage, KSN Industries, Republic Arms, Ruger, Sigarms, Springfield Inc., Taurus, TNW Incorporated, and Walther. I microscopically compared Item 3 to Item 1B. I identified Item 3 as being fired in the same firearm as Items 1A, 1B, and 1C based on sufficient agreement of individual characteristics within the land impressions. Sufficient agreement means the quantity and quality of the agreement of toolmarks produced by the firearm exceed the agreement of toolmarks produced by different firearms, such that the likelihood another firearm could have produced these marks is so remote as to be considered practically impossible.</p>
WZ2TZA	<p>1. Exhibit 1 contains three known .40 bullets indicated to be fired in a Springfield XD-40 pistol.  2. Exhibit 3 is one .40 bullet. a. Microscopic comparison reveals Exhibit 3 was fired in the same firearm as Exhibit 1 based on sufficient agreement of class and individual characteristics.  3. Exhibits 2, 4 and 5 are each one .40 bullet. a. Microscopic comparison reveals Exhibits 2, 4 and 5 were fired in the same firearm based on sufficient agreement of class and individual characteristics. b. Microscopic comparison reveals Exhibits 2, 4 and 5 were not fired in the same firearm as Exhibits 1 and 3 based on an agreement of class characteristics but disagreement of individual characteristics. Observing this amount of disagreement from the same source is considered extremely remote. TECHNICAL NOTES: Class characteristics are defined as measurable features of a firearm or tool, which indicate a restricted group source. They result from design features and are determined prior to manufacture of the firearm or tool. Individual characteristics are defined as marks produced by the random imperfections or irregularities of firearm or tool surfaces. These random imperfections or irregularities can be either produced incidental to manufacture or caused by use, corrosion, or damage, and are unique to that specific tool. Any conclusions indicating that a toolmark was made by a specific firearm or tool are not to the absolute exclusion of all other firearms or tools, because it is not feasible to examine all firearms or tools in the world. However, observing this amount of agreement between different sources is considered extremely remote.</p>
X4BF2R	<p>Comparison of Item 1 (three test fired bullets said to have come from known firearm) to Item 3 (evidence bullet from scene) is inconclusive, showing some agreement of individual characteristics, but insufficient for identification. Comparison of Item 1 to Item 2 (evidence bullet from victim) and 4 &amp; 5 (evidence bullets from scene) is inconclusive, sharing similar class characteristics but lacking agreement of individual characteristics. Comparison of Items 4 &amp; 5 to each other is inconclusive, showing some agreement of individual characteristics, but insufficient for identification. Comparison of Item 1 (three test fired bullets) to each other revealed a lack of reproducible individual characteristics. Because this is a proficiency test, I continued with comparison examinations with submitted evidence, however, had this been actual casework with a firearm available, I would test-fire the firearm an additional multiple times, using a variety of differently marketed like caliber ammunition, to get a better indication of how the firearm reproduces.</p>
X4D6AV	<p>Item 1 contains three (3) fired 40 caliber bullets with six land and groove impressions and right twist. Item 3 is one (1) fired 40 caliber bullet with six land and groove impressions and right twist. Based on the agreement of class characteristics, these bullets were microscopically compared. The bullets from Items 1 and 3 were identified as having been fired from the same firearm based on the sufficient agreement of individual characteristics. Items 2, 4, and 5 are three (3) fired 40 caliber bullets with six land and groove impressions and right twist. Based on the agreement of class characteristics, these bullets were microscopically compared. Items 2, 4, and 5 were identified as having been fired from the same unknown firearm based on the</p>

TABLE 2

WebCode	Conclusions
	sufficient agreement of individual characteristics. Based on agreement of class characteristics, Items 2 and 3 were microscopically compared. Item 2 could not have been fired in the same firearm as Item 3 based on significant disagreement of individual characteristics.
X7G3GG	The projectiles in Items 1 and 3 were fired in the same gun, based on agreement observed in individual characteristics. The projectiles in Items 2, 4 and 5 bear class characteristics consistent with the projectiles in Item 1. However no significant similarities in individual characteristics were observed.
X7ZW4D	Macroscopic and microscopic examination determined that Exhibits 1 through 5 are .40/10mm caliber full copper jacketed, flat nose, bullets that were fired from a barrel(s) rifled with six grooves, right twist and bear marks of value for comparison. Microscopic comparison of the Exhibit 1 through 5 bullets concluded the following: Exhibit 1 and Exhibit 3 were identified as having been fired from the same firearm. Exhibits 2, 4 and 5 were identified as having been fired from the same firearm. Exhibits 1 and 3 were excluded as having been fired from the firearm that fired Exhibits 2, 4 and 5 based on differences in class characteristics.
X976NQ	Item 2, 4 and 5 were fired from the second (unknown) firearm.
X9NA64	Comparison microscope examinations were conducted and the findings of this examiner are as follows: 1). Projectile B (Item 3) was identified as having been fired in the same firearm as the known spent projectiles, Item 1. 2). Projectiles A, C and D (Items 2, 4, and 5) were fired in a second .40 S&W firearm. Suspect weapons include Springfield pistols; however, any suspect weapon should be submitted to the laboratory for analysis.
XAKR3Y	Item 3 was identified microscopically as having been fired from the same firearm that reportedly fired the Item 1 test fires based on agreement of the combination of individual characteristics and all discernible class characteristics. Items 2, 4, and 5 were identified microscopically as having been fired from the same unknown firearm based on agreement of the combination of individual characteristics and all discernible class characteristics. Items 2, 4, and 5 were microscopically eliminated as having been fired from the same firearm that reportedly fired the Item 1 test fires due to disagreement of individual characteristics.
XDZ7NJ	The questioned bullet know as Item 3 has been fired in the Springfield XD-40 handgun found on the suspect. Moreover, the bullets know as Item 2, Item 4 & Item 5 recoverd from the scene, have been fired by the same weapon, different from the one found on the suspect. Two weapons where used on the crime scene.
XFQHBW	Bullet Analysis: Methodology: Physical (Visual Examination), Electronic Balance/Caliper/Digital Micrometer, Microscopy (Comparison Microscope). Items 2, 3, 4, and 5 are 40 caliber class bullets based upon the diameter. Opinion/Interpretation: Item 2, 3, 4, and 5 are consistent with bullets loaded in .40 S&W and 10mm Auto caliber cartridges based upon the weight and style. Items 2, 4, and 5 exhibit characteristics found in (but not limited to) the following firearms: caliber .40 S&W- Astra, Beretta, FN/Browning, Heckler & Koch, Ruger, Sigarms, Springfield Inc., and Taurus. Items 3, the bullet, was fired through the barrel of Item 1, the Springfield pistol, based upon corresponding class and individual microscopic characteristics. Items 2, 4, and 5, the bullets, were fired through the barrel of the same firearm based upon corresponding class and individual microscopic characteristics. Items 2, 4, and 5, the bullets, were not fired through the barrel of Item 1, the Springfield pistol, based upon different individual microscopic characteristics.
XJLC7C	Item 1: "Three bullets fired using the recovered firearm (known)" (1). Item 2: One (1) fired bullet (2). Item 3: One (1) fired bullet (3). Item 4: One (1) fired bullet (4). Item 5: One (1) fired bullet (5). The submitted specimens marked as Items 2, 4, and 5 were examined and identified as

TABLE 2

WebCode	Conclusions
	<p>three (3) fired .40 S&amp;W/10mm Auto caliber jacketed bullets exhibiting six (6) land and groove impressions with a right twist. The submitted specimen marked as Item 3 was examined and identified as one (1) fired .40 S&amp;W caliber jacketed bullet exhibiting six (6) land and groove impressions with a right twist. Items 2 through 5 were microscopically inter-compared and compared to Item 1 known bullets. As a result of microscopic comparison, it was concluded that Item 3 was identified as having been fired from the same firearm that fired Item 1 known bullets. Items 2, 4, and 5 were eliminated as having been fired from the same firearm that fired Item 1 known bullets due to significant disagreement of individual characteristics. Items 2, 4, and 5 were identified as having been fired from the same unknown firearm. Firearms that produce similar rifling characteristics as those exhibited on Items 2, 4, and 5 include, but are not limited to: .40S&amp;W caliber firearms manufactured by Beretta, Heckler &amp; Koch, Ruger, Springfield Inc., Taurus, and Walther; and 10mm Auto caliber firearms manufactured by Heckler &amp; Koch and Kriss USA.</p>
XNJQU2	<p>I microscopically compared Item 001-3 to one of the bullets (Item 001-1A) test fired in the Springfield brand firearm. I observed agreement of all discernable class characteristics and sufficient agreement of individual characteristics to conclude that Item 001-3 was fired in the Springfield brand firearm. I microscopically compared Items 001-2, 001-4, and 001-5 to one of the bullets (Item 001-1A) test fired in the Springfield brand firearm. I observed agreement of all discernable class characteristics; however, I observed significant differences in the individual characteristics. Items 001-2, 001-4, and 001-5 were not fired in the Springfield brand firearm. I microscopically intercompared Items 001-2, 001-4, and 001-5. I observed agreement of all discernable class characteristics and sufficient agreement of individual characteristics to conclude that all three of these bullets were fired from the same firearm.</p>
XNX839	<p>The bullet (3) and the three test fires (1A to 1C) were fired from the Springfield model XD-40 pistol. The three bullets (2, 4, and 5) were not fired from the Springfield XD-40 pistol represented by the test fires (1A to 1C). The three bullets (2, 4, and 5) were fired from a single 40 caliber unknown firearm. Firearms with similar GRC include, but not limited to, those marketed by Astra, Fabrique Nationale, Heckler &amp; Koch, Heritage, Just Right, KSN Industries, Republic Arms, Ruger, Springfield Inc., and Taurus. Any firearm suspected of involvement in this offense should be submitted for comparison.</p>
XPTDCV	<p>"The unknown bullet recovered from the scene identified as item 3 was fired by the barrel of the Springfield XD-40 firearm (Identification) according to the presence of sufficient agreement of class and individual characteristics when compared with the known fired bullets from the Springfield XD-40 firearm, identified as item 1. The unknown bullets identified as items 2, 4 and 5 were not fired by the barrel of the Springfield XD-40 firearm (Elimination), since they lack of sufficient agreement in their individual characteristics when compared with the known fired bullets for the recovered weapon.</p>
XR2ZW8	<p>Compared test bullets against the bullet marked #3 with positive results (Identification). The bullet marked #3 was identified as having been discharged from the Springfield Armory XD 40 pistol. Compared test bullets against the three bullets marked #2, #4 and #5 with negative results (Elimination). The three bullets marked #2, #4 and #5 were eliminated as having been discharged from the Springfield Armory XD-40 pistol. Compared the three bullets marked #2, #4 and #5 against each other with positive results (Identification). The three bullets marked #2, #4 and #5 were identified as having been discharged from the same firearm.</p>
XRYBRB	<p>Items: Description/Visual Examination: Item 1: (3) fired 40 caliber full metal jacket bullets with six (6) lands and grooves, right hand twist rifling, reportedly test fired from suspect's firearm (Springfield XD-40). Items 2-5: (4) fired 40 caliber full metal jacket bullets with six (6) lands</p>

TABLE 2

WebCode	Conclusions
	<p>and grooves, right hand twist rifling. MICROSCOPIC COMPARISON CONCLUSIONS:            Identification: Based upon the reproducibility of class characteristics and microscopic individual characteristics, the following identifications were made: Lab Item; # Evidence Type;            Conclusion: 3 Fired projectile Fired thru the same barrel as Item 1 (suspect firearm, Springfield XD-40) 2, 4 &amp; 5 Fired projectiles Fired thru the same firearm barrel. Elimination: Based upon the difference in individual characteristics, the following eliminations were made: Lab Item #;            Evidence Type; Conclusion: 2, 4 &amp; 5 Fired projectiles Not fired thru the same barrel as Item 1 (suspect firearm, Springfield XD-40) [Name] 2021 Firearms PT 21-5262 Sample Pack F2.            [Participant provided data in a format that could not be replicated in this report]</p>
XTRN9V	<p>FIRST: The bullet identified as Item 3 (unknown) was fired at the time by the firearm that fired the three test fired bullets identified as Item 1 (1A, 1B, 1C), because the unknown bullet and the three test fired bullets show sufficient agreement for identification of individual characteristics. SECOND: The bullets identified as Items 2,4 and 5 (unknown) were fired by the same firearm because they present sufficient agreement for identification in their individual characteristics, it is worth mentioning that they were fired by a firearm different from the one that fired the three bullets (test fired) identified as Item 1 (1A, 1B, 1C), the foregoing because the three unknown bullets and the three test fired bullets have a significant disagreement of discernible individual characteristics. Note: The three test fired bullets identified as Item 1 were internally identified based on the Laboratory procedure as follows: 1A, 1B and 1C.</p>
XU4TWX	<p>Examinations showed the bullet listed as Item 3 (C-2) was discharged from the Springfield XD-40 handgun. Examinations showed the bullets listed as Item 2 (C-1), Item 4 (C-3), and Item 5 (C-4) were discharged from the same unknown firearm.</p>
XU6Q4M	<p>Through macroscopic/microscopic examination and based on agreement of discernible class characteristics and sufficient corresponding individual detail, the fired bullets, Laboratory Items 1 and 3, were identified as having been fired from the same firearm. Through macroscopic/microscopic examination and based on agreement of discernible class characteristics and sufficient corresponding individual detail, the fired bullets, Laboratory Items 2, 4 and 5, were identified as having been fired from the same firearm. Through macroscopic/microscopic examination and based on significant disagreement of individual characteristics, the fired bullets, Laboratory Items 1 and 3, could not have been fired from the same firearm as the fired bullets, Laboratory Items 2, 4 and 5.</p>
XYHDXR	<p>Test fires from Item #1-1 were microscopically compared to Item #1-3 and found to have areas of corresponding individual characteristics. Item #1-3 was identified as having been fired from the same firearm as Item #1-1. The bullets in Items #1-2, #1-4, and #1-5 were microscopically compared to each other and found to have areas of corresponding individual characteristics. They were identified as having been fired in the same firearm. The bullets in Items #1-2, #1-4, and #1-5 were microscopically compared to test fires identified as having been fired from Item #1 and found to have similar class characteristics; however, based on disagreement of individual characteristics, they were eliminated as having been fired in Item #1-1.</p>
Y276PN	<p>The bullet (Item 3) was compared to the Springfield XD-40 firearm (Item 1). The bullets have the same class of rifling and sufficient corresponding individual microscopic marks to determine that Item 1 fired the bullet Item 3. The bullets (Items 2, 4, and 5) were compared to each other. These bullets have the same class of rifling and sufficient corresponding individual microscopic marks to determine that they were all fired by the same firearm. Items 2, 4, and 5 were fired by a different firearm than Item 1.</p>
Y6GKRK	<p>The examination of the recovered fired bullets under a comparison microscope allows us to</p>

TABLE 2

WebCode	Conclusions
	conclude that the item 3 was fired from the seized Springfield XD-40 handgun. The examination also showed that the items 2,4 and 5 were fired from a second firearm.
YMMMRE	The Items 1, 2, 3, 4 and 5 fired bullets were examined and determined to be 40/10mm caliber bullets that were fired by a firearm having conventional style rifling consisting of six lands and grooves with right twist. The Items 1, 2, 3, 4 and 5 fired bullets were microscopically compared to each other based on agreement of class characteristics. The Items 1 and 3 fired bullets were identified as having been fired by the same firearm due to sufficient agreement of individual characteristics. The Items 2, 4 and 5 fired bullets were identified as having been fired by the same firearm due to sufficient agreement of individual characteristics. Common firearms with the same (or that produce the same) class characteristics include models produced by: Beretta, Ruger, Smith & Wesson, Springfield and Taurus. This is not an all-inclusive list; therefore, all 40/10mm caliber firearms recovered during the course of this investigation should be submitted along with the above listed fired evidence. Items 1 and 3 were fired from a different firearm than Items 2, 4 and 5 due to agreement of class characteristics but differences in individual characteristics. The significance of these identifications is made to the practical, not absolute, exclusion of all other firearms.
YRV34N	Items (#2,#3,#4,#5) were microscopically examined to each other. Based on the comparative examination, individual characteristics were observed and it was determined that; Item #3 was discharged from the same firearms as the known cases (Item 1), and the others (item #2,#4 and #5) were not same.
YRYZPZ	Items 1 through 3 (CTS Item 1) are .40 caliber copper jacketed bullets that were reported as being test fires from a Springfield Armory pistol, Model XD-40. The Item 1, 2, and 3 bullets were identified as having been fired from the same firearm. Items 4 through 7 (CTS Items 2 through 5) are .40 caliber copper jacketed bullets that were fired from a barrel rifled with 6 grooves, right twist. The Item 5 bullet (CTS Item 3) was identified as having been fired from the same barrel as the Item 1, 2, and 3 bullets (Group 1). The Item 4 (CTS Item 2), Item 6 (CTS Item 4), and the Item 7 (CTS Item 5) bullets were identified as having been fired from the barrel of the same firearm (Group 2). A pattern examination of the Group 1 bullets and the Group 2 bullets was inconclusive, due to a lack of sufficient corresponding microscopic marks of value.
YW72VG	The projectiles in Item 1 and the projectile in Item 3 were fired from the same gun, based on agreement observed in individual characteristics. The projectiles in Items 2, 4 and 5 bear class characteristics consistent with the projectiles in Item 1. However, no significant similarities in individual characteristics observed.
Z2VK6X	According to the individual characteristics and microscopies, it is determined that the witness firearm fires the bullet marked as sign 3. According to the individual characteristics and microscopies, it is determined that signs 2, 4 and 5 were not fired by the firearm.
Z4L2QJ	The fired bullet, Item 3, was microscopically examined and compared with the test fired bullets, Item 1. Based on the observed agreement of their class characteristics and sufficient agreement of their individual characteristics, Item 3 is identified as having been fired from the same firearm as the test fired bullets, Item 1. The fired bullets, Items 2, 4 and 5, were further microscopically examined and compared with the test fired bullets, Item 1. There is observed agreement of their class characteristics. Based on the lack of sufficient agreement of individual characteristics, however, Items 2, 4 and 5 were not identified as having been fired from the same firearm as the test fired bullets from Item 1.
Z6FVBU	Bullet Analysis: Methodology: Physical (Visual Examination), Electronic Balance/Digital Caliper/Digital Micrometer, Microscopy (Comparison Microscope). Items 1, 2, 3, 4, and 5 are

TABLE 2

WebCode	Conclusions
	40 caliber class bullet based upon the diameter. Items 1 and 3, the bullets, were fired through the barrel of the same firearm based upon corresponding class and individual microscopic characteristics. Items 2, 4, and 5, the bullets, were fired through the barrel of the same firearm based upon corresponding class and individual microscopic characteristics. Items 1 and 3, the bullets, were not fired through the barrel of the same firearm as Items 2, 4, and 5, the bullets, based upon different individual microscopic characteristics. Opinion/Interpretation: Items 1, 2, 3, 4, and 5 are consistent with bullets loaded in .40 S&W and 10mm Auto caliber cartridges based upon the weight and style.
ZBMBWC	Item 3 was fired in the same firearm as the Item 1 test fires (pistol, 40 S&W caliber, Springfield, model XD-40, serial number unknown). Items 2, 4, and 5 were fired in a second firearm. Items 2, 4 and 5 are consistent with bullets from ammunition designated 40 S&W or 10mm Auto. A list of makes of firearms that may have fired these items includes, but is not limited to: Astra, Beretta, Fabrique Nationale, FN/Browning, Heckler & Koch, Heritage, KSN Industries, Republic Arms, Ruger, Sigarms, Springfield Inc., and Taurus.
ZE4NPC	Items 1, 2, 3, 4, 5: A microscopic comparison was conducted between Test bullets # 1, 2, 3, Item 1 that was fired from the recovered firearm and Items 3. The examinations determined that Item 3 was fired from the recovered firearm, due to a sufficient agreement between striations. A microscopic comparison was conducted between Item 2 and Items 4 and 5. The examinations determined that Items 2, 4 and 5 were fired from the same firearm due to a sufficient agreement between striations. A microscopic comparison was conducted between Test bullets # 1, 2, 3, Item 1 that was fired from the recovered firearm and Items 2, 4 and 5. The examinations determined that Items 2, 4 and 5 were not fired from the recovered firearm (Item 1) due to a disagreement of individual characteristics. Disposition: Items 1, 2, 3, 4 and 5 will be forwarded to the Property Custody Section. All firearm comparison examinations were conducted using the AFTE's (Association of Firearm & Tool Mark Examiners) Theory of Identification. Identifications are the opinion of a qualified examiner that two tool marks were made by the same tool based on sufficient agreement of individual characteristics. The agreement of individual characteristics is of a quantity and quality that the likelihood another (different) tool could have made the mark is so remote as to be considered a practical impossibility. All exclusions and inconclusive findings were based upon exemplars available at the time of the examinations.
ZL36AQ	The bullet item 3 was fired by the same weapon as the bullet item 1 (reference).
ZTJ2R7	EVIDENCE SUBMITTED: Lab Item # Agency Item # Description 1). F2 One (1) cardboard box containing: 1.1). F2 Three (3) testfires from a Springfield model XD-40, .40 S&W caliber pistol. 1.2). F2 One (1) fired bullet. 1.3). F2 One (1) fired bullet. 1.4). F2 One (1) fired bullet. 1.5). F2 One (1) fired bullet. CONCLUSIONS OF ANALYSIS: The fired bullet, item 1.3, was identified as having been fired in the Springfield pistol, item 1.1. The three (3) fired bullets, items 1.2, 1.4, and 1.5, were consistent in all observable class characteristics (caliber, number of lands and grooves, rifling, twist, and widths of lands and grooves) as the Springfield pistol, item 1.1. While there is some disagreement of microscopic markings, the markings present are insufficient for an elimination. The results are inconclusive. The three (3) fired bullets, items 1.2, 1.4, and 1.5, were each identified as having been fired in the same firearm. Note: Identifications are based on the agreement of all discernable class characteristics and agreement of corresponding individual microscopic markings. [Participant provided data in a format that could not be replicated in this report. Data is presented as is.]
ZW2NHR	The questioned expended bullet Item 3 was fired by the same firearm as the known bullets (Item 1); The questioned expended bullet Item 2, Item 4 and Item 5 were fired by a second

TABLE 2

WebCode	Conclusions
	unknown firearm (unknown).
ZWNU3R	Item 1 consists of three (3) .40/10mm caliber family bullets indicated as being fired from a Springfield Armory (HS Produkt) pistol, Model XD-40. Item 2 through Item 5 consist of .40/10mm caliber family bullets bearing six (6) lands/grooves with a right twist. The Item 3 bullet was identified as having been fired from the same barrel as the Item 1 bullets. Item 2, Item 4, and Item 5 were identified as having been fired from the same barrel. A pattern examination of the Item 2, Item 4 and Item 5 bullets and the Item 1 and Item 3 bullets was inconclusive due to a lack of sufficient corresponding microscopic marks of value.
ZZNQKC	The 40 caliber class bullets (Items 1 and 3) were fired from the same firearm. The remaining 40 caliber class bullets (Items 2, 4 and 5) were all fired from a second firearm.

# Additional Comments

TABLE 3

WebCode	Additional Comments
2JW32Z	My finding after carry out analyst and comparison: (3) bullets in item 1, (1) bullet in item 2, (1) bullet in item 3, (1) bullet in item 4 and (1) bullet in item 5 have same characteristics. Therefore, my conclusion that bullets in item 2, 3, 4 and 5 had been fired from same firearm namely a Springfield XD-40 handgun
2VPJTM	Item 1, the test fired bullets, were submitted as "40 auto" caliber. This is an unknown caliber, however, the test fired bullet weight and design is consistent with 40 S&W/10mm Auto caliber and the XD-40 is chambered for 40 S&W. No patterns of agreement and some disagreement observed when comparing Items 2, 4, and 5 to Item 1 (test fired bullets). However, the differences are not significant enough to eliminate. Laboratory policy strongly discourages eliminations based on individual characteristics.
3G8483	TECHNICAL NOTES: Class characteristics are defined as measurable features of a firearm/tool which indicate a restricted group source. They result from design features and are determined prior to manufacture of the firearm/tool. Individual characteristics are defined as marks produced by the random imperfections or irregularities of firearm/tool surfaces. These random imperfections or irregularities are produced incidental to manufacture and/or caused by use, corrosion, or damage, and are unique to that specific tool. Any conclusions indicating that a toolmark was made by a specific firearm/tool are not to the absolute exclusion of all other firearms/tools because it is not feasible to examine all possible firearms/tools. However, observing this amount of agreement from a different source is considered extremely remote.
3KMM7B	Similarities have been observed between the marks in the bullets Items 2, 4 and 5. This observation lead to an additional examination between the marks in Item 2, 4 and 5. The findings of this examination were viewed under the following two hypotheses: H3: The questioned bullets are fired by one firearm. H4: The questioned bullets are fired by two firearms of the same caliber and with the same class characteristics. The findings of the additional examination are extremely more probable when H3 is true than when H4 is true.
3QC6JM	Items 2, 4, and 5 could neither be identified nor eliminated as having been fired the same firearm that fired item 1 bullets, in the opinion of the laboratory. These inconclusive conclusions were based on insufficient similarities and insufficient differences in the patterns of microscopic markings observed among the compared items for conclusions of identification or elimination, respectively.
4RH373	The three fired bullets showed agreement in available class characteristics to the test fired bullets; however, there was a lack of agreement or disagreement in available individual pattern areas to identify or eliminate.
4ULXP7	Differences were noted in individual characteristics between the Items 01-02, 01-04, and 01-05 bullets and the Items 01-01 and 01-03 bullets, but all discernible class characteristics were in agreement and the differences in individual were not sufficient for an elimination to be reached.
4XMBNC	THE ELEMENTS MARKED AS ITEM 2, ITEM 4, AND ITEM 5, IT IS CONCLUDED THAT THERE IS A CORRESPONDENCE BETWEEN THEM AND THAT THEY WERE FIRED BY A SINGLE FIREARM. THEREFORE, THEY ARE EXCLUDED FROM THE THREE RECOVERED BULLETS CORRESPONDING TO ITEM 1 OF THE SPRINGFIELD XD-40 FIREARM

TABLE 3

WebCode	Additional Comments
6GVGMQ	The fired bullets from items 2, 4, and 5 were fired in the same firearm; however, a different firearm than the source of the bullets in items 1 and 3.
6ZRTA7	Laboratory tracking numbers were used in the report (Item 1 is laboratory number 01-01(A-C), Item 2 is laboratory number 01-02, Item 3 is laboratory number 01-03, Item 4 is laboratory number 01-04 and Item 5 is laboratory number 01-05). Due to similarity of class characteristics and differences in individual characteristics (potentially due to differences in ammo) without the firearm for further testing and evaluation Items 01-01A, 01-01B, 01-01C and 01-03 could not be identified or eliminated as having been fired from the same firearm as Items 01-02, 01-04 and 01-05.
76FVRV	From the analysis, we covered that the suspect is only used one type of firearm when he is shoot the victim.
7QGRN6	I used our LIMS item numbers. They correspond as follows: Item 01-01: Agency Item 1. Item 01-02: Agency Item 2. Item 01-03: Agency Item 3. Item 01-04: Agency Item 4. Item 01-05: Agency Item 5. In addition, my standard practice is to perform an FBI GRC search when eliminating items. Since Items 2,4, and 5 were eliminated from Item 1, a GRC search was performed.
7WQXC�	Items 2, 4 and 5, the bullets, were fired through the barrel of the same firearm based upon corresponding class and individual microscopic characteristics.
8GBGHR	Practical Certainty: Since it is not possible to collect and examine samples of all firearms, it is not possible to make an identification with absolute certainty. However all scientific research and testing to date and the continuous inability to disprove the principles of toolmark analysis have demonstrated that firearms produce unique, identifiable characteristics which allow examiners to reliably make identifications. Firearms/Toolmark Identification is an empirical science that relies on objective observations and a subjective interpretation of microscopic marks of value.
8LKMAR	The bullet recovered from the victim by the medical examiner identified as ITEM 2 and the two bullets recovered from the scene, identified as ITEM 4 and ITEM 5, were fired by the same arm, but not by the handgun Springfield XD-40 seized from the suspect 's car.
8P4UF7	The three bullets (Items 2, 4, and 5) were determined to be characteristic of .40 S&W / 10mm Auto caliber full metal jacket style bullets. They were fired from a firearm rifled with six grooves, right hand twist. Based on a search of the FBI's 2016 General Rifling Characteristics database, firearms that share these rifling characteristics include, but are not limited to those manufactured under the brand names Astra, Beretta, Fabrique Nationale, FN/Browning, Heckler & Koch, Ruger, Sigarms, Springfield Inc., Taurus. Any suspect firearm should be submitted for comparison. The three bullets (Items 2, 4, and 5) were microscopically compared to each other. Based on sufficient corresponding individual barrel markings observed, these three bullets (Items 2, 4, and 5) were identified as having been fired from the same firearm.
8PXM7H	1). Identification: Based on the agreement of the individual characteristics observed through the microscopic comparison test.
8Y9QDG	"Item 2", "Item 4" and "Item 5" were fired in the same unknown firearm.
9NKK96	Two (02) firearms were used in crime scene.

TABLE 3

WebCode	Additional Comments
9UQGT6	The recovered bullet from the victim listed as item 2 and the recovered bullets from the scene listed as items 4 and 5 were not fired from the Springfield XD-40 brand firearm.
A28WTY	Correspondence observed between items 2, 4, and 5 bullets.
A7HUGL	I could not determine whether Item 2 was/was not discharged from the firearm that discharged Item 1 because of insufficient corresponding detail and insufficient differences in detail.
AF4LUK	The exercise was practical for the application to the comparative studies of bullet that ballistics group of [City] in [Country] activity that is very frequent in this laboratory by Material evidence submitted for analysis of criminal cases which use one or more firearms.
AV22AY	TECHNICAL NOTES: Class characteristics are defined as measurable features of a firearm or tool, which indicate a restricted group source. They result from design features and are determined prior to manufacture of the firearm or tool. Individual characteristics are defined as marks produced by the random imperfections or irregularities of firearm or tool surfaces. These random imperfections or irregularities can be either produced incidental to manufacture or caused by use, corrosion, or damage, and are unique to that specific tool. Any conclusions indicating that a toolmark was made by a specific firearm or tool are not to the absolute exclusion of all other firearms or tools, because it is not feasible to examine all firearms or tools in the world. However, observing this amount of agreement between different sources is considered extremely remote.
B48Y3F	Methods: Pattern Examination: Toolmarks, whether they are present on evidence items or secondary evidence created in the Laboratory, undergo two stages of comparison. First, the class characteristics are reviewed and compared. If the class characteristics of the toolmarks are not clearly different, the examination moves to a second stage using comparative microscopy. A microscopic comparison examination consists of a search of the impressed and striated marks present in two toolmarks to determine if patterns of similarity exist. At the completion of these comparisons, one of the following three opinions is issued: 1) Source Exclusion: Source exclusion is an Examiner's conclusion that two toolmarks did not originate from the same source. This conclusion is an Examiner's opinion that the observed difference(s) in class characteristics provides extremely strong support for the proposition that the two toolmarks came from different sources and extremely weak or no support for the proposition that the two toolmarks came from the same source. A source exclusion based on a minor difference in measured class characteristics requires a verification. 2) Source Identification: Source identification is an Examiner's conclusion that two toolmarks originated from the same source. This conclusion is an Examiner's opinion that all observed class characteristics are in agreement and the quality and quantity of corresponding individual characteristics is such that the Examiner would not expect to find that same combination of individual characteristics repeated in another source. The basis for a source identification conclusion is an Examiner's opinion that the observed class characteristics and corresponding individual characteristics provide extremely strong support for the proposition that the two toolmarks originated from the same source and extremely weak support for the proposition that the two toolmarks originated from different sources. A source identification requires a verification and is the Examiner's opinion that the probability that the two toolmarks were made by different sources is so small that it is negligible. 3) Inconclusive (No Conclusion): Inconclusive is an Examiner's conclusion that all observed class characteristics are in agreement but there is insufficient quality and/or quantity of corresponding individual characteristics such that the Examiner is

TABLE 3

WebCode	Additional Comments
	unable to identify or exclude the two toolmarks as having originated from the same source. This conclusion is an Examiner's opinion that there is an insufficient quality and/or quantity of individual characteristics to identify or exclude. Reasons for an inconclusive conclusion include the presence of microscopic similarity that is insufficient to form the conclusion of source identification, or a lack of any observed microscopic similarity. Limitations: Pattern Examination: Firearms/Toolmark Identification is an empirical science that relies on objective measurements and a subjective comparison of microscopic marks of value. Due to variation in substrate, changes in tool working surfaces from wear, corrosion, and damage, or the employment of unusual tool/work piece orientations, it may not be possible for an Examiner to reach a source conclusion. Additionally, some tool manufacturing methods routinely produce working surfaces that leave limited microscopic marks of value. Damaged, corroded, or fragmented items may be of little or no value for comparison purposes.
BUPN8N	Practical Certainty: Since it is not possible to collect and examine samples of all firearms, it is not possible to make an identification with absolute certainty. However all scientific research and testing to date and the continuous inability to disprove the principles of toolmark analysis have demonstrated that firearms produce unique, identifiable characteristics which allow examiners to reliably make identifications.
BYE83Q	Meanwhile, comparison between three (3) bullet in item 1 with the bullet in item 2, 3, 4 and 5 give the result that bullet have same characteristics. Therefore, my conclusion that bullets in item 2, 3, 4 and 5 had been fired from same firearm namely a Springfield XD-40 handgun.
C9EP4Z	EL RESULTADO DEL PRESENTE ESTUDIO MICRO COMPARATIVO, ES LA CONCORDANCIA DE CARACTERÍSTICAS DE CLASE E INDIVIDUALES ENTRE LOS ELEMENTOS COTEJADOS, CON BASE EN LA COMPETENCIA DEL QUE SUSCRIBE. [English translation of comments was not obtained by the time of report publication]
CJX2JJ	In the facts participated three weapons: Weapon 1 (Item 1 and Item 3) Firearm No. 1. Weapon 2 (Item 2, Item 4 and Item 5) Firearm No. 2
DNQNQC	This conclusion for the items 1 and 3 identification would not normally be made without direct examination of the suspect weapon for possible subclass influence. For the purposes of this exercise I am assuming the recovered pistol is free from subclass influence. Properly lit photographs of barrel casts would allow subclass evaluation and should be included with future tests. The inconclusive results for items 2, 4, and 5 are based on agreement of discernable class characteristics and disagreement of individual characteristics that was insufficient for an elimination.
DUDDAM	The class characteristics on the surface of the items 2, 4 and 5 seem to match the ones on the surface of the know bullets, but it seems that there ar no matches while comparing individual characteristics. And since lack of the of these individual characteristics can be explained by the manufacturing proceses of cartridges as well as bullets by the various manufacturers, quality of the weapon and other factors. Thus we cannot say beyond reason of the doubt that the Item 2, 4 and 5 were fired or not, from the recovered firearm.
DZ3T2E	Methods: Pattern Examination: Toolmarks, whether they are present on evidence items or secondary evidence created in the Laboratory, undergo two stages of comparison. First, the class characteristics are reviewed and compared. If the class characteristics of the toolmarks are not clearly different, the examination moves to a second stage using comparative microscopy. A microscopic comparison examination consists of a search of the impressed and

TABLE 3

WebCode	Additional Comments
	<p>striated marks present in two toolmarks to determine if patterns of similarity exist. At the completion of these comparisons, one of the following three opinions is issued: 1) Source Exclusion: Source exclusion is an Examiner's conclusion that two toolmarks did not originate from the same source. This conclusion is an Examiner's opinion that the observed difference(s) in class characteristics provides extremely strong support for the proposition that the two toolmarks came from different sources and extremely weak or no support for the proposition that the two toolmarks came from the same source. A source exclusion based on a minor difference in measured class characteristics requires a verification. 2) Source Identification: Source identification is an Examiner's conclusion that two toolmarks originated from the same source. This conclusion is an Examiner's opinion that all observed class characteristics are in agreement and the quality and quantity of corresponding individual characteristics is such that the Examiner would not expect to find that same combination of individual characteristics repeated in another source. The basis for a source identification conclusion is an Examiner's opinion that the observed class characteristics and corresponding individual characteristics provide extremely strong support for the proposition that the two toolmarks originated from the same source and extremely weak support for the proposition that the two toolmarks originated from different sources. A source identification requires a verification and is the Examiner's opinion that the probability that the two toolmarks were made by different sources is so small that it is negligible. 3) Inconclusive (No Conclusion): Inconclusive is an Examiner's conclusion that all observed class characteristics are in agreement but there is insufficient quality and/or quantity of corresponding individual characteristics such that the Examiner is unable to identify or exclude the two toolmarks as having originated from the same source. This conclusion is an Examiner's opinion that there is an insufficient quality and/or quantity of individual characteristics to identify or exclude. Reasons for an inconclusive conclusion include the presence of microscopic similarity that is insufficient to form the conclusion of source identification, or a lack of any observed microscopic similarity. Limitations: Pattern Examination: Firearms/Toolmark Identification is an empirical science that relies on objective measurements and a subjective comparison of microscopic marks of value. Due to variation in substrate, changes in tool working surfaces from wear, corrosion, and damage, or the employment of unusual tool/work piece orientations, it may not be possible for an Examiner to reach a source conclusion. Additionally, some tool manufacturing methods routinely produce working surfaces that leave limited microscopic marks of value. Damaged, corroded, or fragmented items may be of little or no value for comparison purposes.</p>
DZ4MHZ	<p>ITEM 1 vs ITEM 2 R= ELIMINATION. ITEM 1 vs ITEM 3 R= IDENTIFICATION. ITEM 1 vs ITEM 4 R= ELIMINATION. ITEM 1 vs ITEM 5 R= ELIMINATION. ITEM 2 vs ITEM 3 R= ELIMINATION. ITEM 2 vs ITEM 4 R= IDENTIFICATION. ITEM 2 vs ITEM 5 R= IDENTIFICATION. ITEM 3 vs ITEM 4 R= ELIMINATION. ITEM 3 vs ITEM 5 R= ELIMINATION. ITEM 4 vs ITEM 5 R= IDENTIFICATION.</p>
EKMKMA	<p>Regarding the microscopic comparison between item 1 and 2, the result was inconclusive because there was agreement of all discernable class characteristics and disagreement of individual characteristics, but insufficient for an elimination. Regarding the microscopic comparison between item 1 and 4, the result was inconclusive because there was agreement of all discernable class characteristics and disagreement of individual characteristics, but insufficient for an elimination. Regarding the microscopic comparison between item 1 and 5, the result was inconclusive because there was agreement of all discernable class characteristics and disagreement of individual characteristics, but insufficient for an elimination.</p>

TABLE 3

WebCode	Additional Comments
EPHEHP	In my opinion items 2, 4 and 5 matched on significant fine matching detail within the lands.
EWDC8D	The recovered bullets labeled Items 2, Item 4 and Item 5 was fired in the same firearm.
FBQT7E	Two weapons were used, one of which is the one recovered from the suspect
FQ78TY	The firearms used to fire all items included in this CTS test were very poor quality choices that notoriously don't mark well.
FUPCBU	Items 2, 4, and 5 and Items 3 and 1 exhibit similar class characteristics; however, Items 2, 4, and 5 and Items 3 and 1 could not be identified or eliminated as having been fired from the same firearm due to a lack of agreement or disagreement of individual characteristics.
GHARHL	From the analysis, we covered that the suspect is only used one type of firearm when he is shoot the victim.
GTRX9G	<p>Methods: Pattern Examination: Toolmarks, whether they are present on evidence items or secondary evidence created in the Laboratory, undergo two stages of comparison. First, the class characteristics are reviewed and compared. If the class characteristics of the toolmarks are not clearly different, the examination moves to a second stage using comparative microscopy. A microscopic comparison examination consists of a search of the impressed and striated marks present in two toolmarks to determine if patterns of similarity exist. At the completion of these comparisons, one of the following three opinions is issued: 1) Source Exclusion: Source exclusion is an Examiner's conclusion that two toolmarks did not originate from the same source. This conclusion is an Examiner's opinion that the observed difference(s) in class characteristics provides extremely strong support for the proposition that the two toolmarks came from different sources and extremely weak or no support for the proposition that the two toolmarks came from the same source. A source exclusion based on a minor difference in measured class characteristics requires a verification. 2) Source Identification: Source identification is an Examiner's conclusion that two toolmarks originated from the same source. This conclusion is an Examiner's opinion that all observed class characteristics are in agreement and the quality and quantity of corresponding individual characteristics is such that the Examiner would not expect to find that same combination of individual characteristics repeated in another source. The basis for a source identification conclusion is an Examiner's opinion that the observed class characteristics and corresponding individual characteristics provide extremely strong support for the proposition that the two toolmarks originated from the same source and extremely weak support for the proposition that the two toolmarks originated from different sources. A source identification requires a verification and is the Examiner's opinion that the probability that the two toolmarks were made by different sources is so small that it is negligible. 3) Inconclusive (No Conclusion): Inconclusive is an Examiner's conclusion that all observed class characteristics are in agreement but there is insufficient quality and/or quantity of corresponding individual characteristics such that the Examiner is unable to identify or exclude the two toolmarks as having originated from the same source. This conclusion is an Examiner's opinion that there is an insufficient quality and/or quantity of individual characteristics to identify or exclude. Reasons for an inconclusive conclusion include the presence of microscopic similarity that is insufficient to form the conclusion of source identification, or a lack of any observed microscopic similarity. Limitations: Pattern Examination: Firearms/Toolmark Identification is an empirical science that relies on objective measurements and a subjective comparison of microscopic marks of value. Due to variation in substrate, changes in tool working surfaces from wear, corrosion, and damage, or the employment of unusual tool/work piece orientations, it may not be possible for an Examiner</p>

TABLE 3

WebCode	Additional Comments
	to reach a source conclusion. Additionally, some tool manufacturing methods routinely produce working surfaces that leave limited microscopic marks of value. Damaged, corroded, or fragmented items may be of little or no value for comparison purposes.
JFGPFU	Manufacturer's materials indicate that the Springfield XD-40 is rifled by hammer forging. Hammer-forged conventional rifling bears some risk of subclass influence in the lands, though it does not ordinarily transfer significantly to bullets fired from such barrels. Comparison of the bullets in Items 1 and 3 to the bullets in Items 2, 4, and 5 displays some provocative similarities, but not enough to effect and ID. Comparison of bullets in Items 1 and 3 to the bullets in Items 2, 4, and 5 turned one LI off-index sometimes display a similar degree of similarity, suggesting potential subclass influence, and further diminishing the potential significance of the similarities. The overall rifling impressions in Items 1 and 3 display some slight differences from the rifling impressions in Items 2, 4, and 5, but are relatively consistently similar within each group. But, since the differences are slight, the rifling is generally shallow in both groups, there are some indication of slippage in both groups, there is often a poor distinction between the bottom of the LIs and the shoulder, and the reproduction of both groups is both somewhat variable, the differences are not sufficiently reliable for an elimination. Also, I am not confident that the sample set is not overly contrived (e.g. some of the unknowns might have been fired from the same firearm, using the same type of ammunition but with slightly different powder charges to exacerbate reproduction variability in some samples). Additionally, no individual differences of clear significance were noted. The similarities are insufficient for identification, the class characteristics are not significantly different, and there are no clearly significant differences in individual characteristics, so the conclusion is inconclusive.
JQUYTL	It was not determined if Items 2, 4 or 5 were fired by the Springfield XD-40 handgun that fired Items 1 and 3 due to the agreement of all discernible class characteristics and disagreement of individual characteristics, but insufficient for an elimination; the results of these comparisons were inconclusive.
JXBDYD	Items #2, #4, and #5 were eliminated as having been fired from the item #1 pistol due to sufficient disagreement of individual characteristics. A slight difference of class characteristics (GRC measurements) was noted.
K77NUU	Item #2 showed agreement of class characteristics and some gross individual characteristics as Items #4 and #5, however, lacked sufficient agreement to further preclude a stronger association to Items #4 and #5.
K8FM4G	All exhibits do not have individual characteristic similarities with existing data in the [Laboratory] database.
KZWG7A	It is in the closest consideration, that the bullet item 3 was fired with the Springfield XD-40 self-loading pistol found at the scene. The findings contradicts, that the bullets item 2, 4 and 5 were fired from the found weapon. And it is to be considered in closest consideration, that the bullets item 2, 4 and 5 were fired with the same unknown firearm.
LKXUDM	The General Rifling Characteristics (GRC) of Lab Item 2 (one .40 caliber projectile) are consistent with firearms manufactured by Taurus, Springfield, and Beretta; however, this listing is not all inclusive.
LNZVF6	1. These conclusion are based in bullet examination, microscopic examination and

TABLE 3

WebCode	Additional Comments
	microscopic comparison examination. 2. Identification: Based on agreement of individual characteristics observed by the microscopic comparison examination. 3. The E-1 to E-3 is item 1, E-4 is item 2, E-5 is item 3, E-6 is item 4, and E-7 is item 5.
MLMBX3	Identifications are made under the following assumptions: (1) the bullets recovered from the scene and victim were left at or near the same time during the same incident and/or (2) subclass influence was considered and eliminated prior to submission of the evidence. If these assumptions could not be made, my conclusions may have been different. As long as bullet comparisons tests are going to be conducted in this way, I feel that information should be provided regarding barrel evaluations (e.g. the risk of subclass influence has been considered and eliminated, subclass influence not eliminated, etc). Since we are not able to perform this examination and form a conclusion, it forces us as examiners to make assumptions that we may not make in casework. Providing this information would help ensure that the test case approach was performed most like casework. It may also improve consistency of reporting results.
N6YKTE	The method of testing for ammunition components (that have results that fall into the range of conclusions defined below) included physical examination and microscopic comparison. Elimination results that are reported as based on a difference in class characteristics include only physical examination. Identified: Agreement of all discernible class characteristics and sufficient agreement of individual characteristics where the extent of agreement leads to the conclusion that the items were fired in/from the same firearm. Inconclusive (+): Agreement of all discernible class characteristics and some agreement of individual characteristics but insufficient for an identification. Inconclusive: Agreement of all discernible class characteristics without significant agreement or disagreement of individual characteristics; therefore, the items could neither be identified nor eliminated as having been fired in/from the same firearm. Inconclusive (-): Agreement of all discernible class characteristics and some disagreement of individual characteristics, but insufficient for an elimination. Eliminated: Significant disagreement of discernible class characteristics and/or individual characteristics leading to the conclusion that the items were not fired in/from the same firearm.
NCXEGE	The results of the analysis found that (7) bullets from item 1, item 2, item 3, item 4 and item 5 had the same characteristic individual characteristics and were fired from (1) the same weapon.
NP46K8	The three (3) questioned bullets, Item2, Item4 and Item5, possess similar class characteristics i.e. Number of lands and grooves: 6. Direction of twist: Right. Width of land and grooves as the known bullet, Item 1. However, I am unable to positively identify or eliminate them as having been discharged from the same firearm as the known bullet, Item 1.
NUXWJB	This is established by comparing the bullets related in items 2, 3, 4 and 5, with the three (3) bullets related in item 1.
P9V3D7	Two weapons were used, one of which is the one recovered from the suspect.
PY8WBD	An inconclusive finding resulted from agreement of all discernible class characteristics, and some disagreement of individual characteristics, but insufficient for an elimination.
QRM4Q2	Item 2 + item 5.
REFECC	Items 2,4 and 5 were fired in a second gun.

TABLE 3

WebCode	Additional Comments
RMKMRC	Item 2, 4, 5 bullets were fired in the same firearm which is different from the seized handgun.
ULMH43	Items 001 through 005 marked very poorly.
UU3YYX	<p>Methods: Pattern Examination: Toolmarks, whether they are present on evidence items or secondary evidence created in the Laboratory, undergo two stages of comparison. First, the class characteristics are reviewed and compared. If the class characteristics of the toolmarks are not clearly different, the examination moves to a second stage using comparative microscopy. A microscopic comparison examination consists of a search of the impressed and striated marks present in two toolmarks to determine if patterns of similarity exist. At the completion of these comparisons, one of the following three opinions is issued: 1) Source Exclusion: Source exclusion is an Examiner's conclusion that two toolmarks did not originate from the same source. This conclusion is an Examiner's opinion that the observed difference(s) in class characteristics provides extremely strong support for the proposition that the two toolmarks came from different sources and extremely weak or no support for the proposition that the two toolmarks came from the same source. A source exclusion based on a minor difference in measured class characteristics requires a verification. 2) Source Identification: Source identification is an Examiner's conclusion that two toolmarks originated from the same source. This conclusion is an Examiner's opinion that all observed class characteristics are in agreement and the quality and quantity of corresponding individual characteristics is such that the Examiner would not expect to find that same combination of individual characteristics repeated in another source. The basis for a source identification conclusion is an Examiner's opinion that the observed class characteristics and corresponding individual characteristics provide extremely strong support for the proposition that the two toolmarks originated from the same source and extremely weak support for the proposition that the two toolmarks originated from different sources. A source identification requires a verification and is the Examiner's opinion that the probability that the two toolmarks were made by different sources is so small that it is negligible. 3) Inconclusive (No Conclusion): Inconclusive is an Examiner's conclusion that all observed class characteristics are in agreement but there is insufficient quality and/or quantity of corresponding individual characteristics such that the Examiner is unable to identify or exclude the two toolmarks as having originated from the same source. This conclusion is an Examiner's opinion that there is an insufficient quality and/or quantity of individual characteristics to identify or exclude. Reasons for an inconclusive conclusion include the presence of microscopic similarity that is insufficient to form the conclusion of source identification, or a lack of any observed microscopic similarity. Limitations: Pattern Examination: Firearms/Toolmark Identification is an empirical science that relies on objective measurements and a subjective comparison of microscopic marks of value. Due to variation in substrate, changes in tool working surfaces from wear, corrosion, and damage, or the employment of unusual tool/work piece orientations, it may not be possible for an Examiner to reach a source conclusion. Additionally, some tool manufacturing methods routinely produce working surfaces that leave limited microscopic marks of value. Damaged, corroded, or fragmented items may be of little or no value for comparison purposes.</p>
VDMKRJ	IDENTIFICATION OF BULLETS 2, 4 AND 5 AS HAVING BEEN FIRED BY THE SAME FIREARM.
VK9D76	The .40 auto caliber projectiles in items 2, 4 and 5 were fired by a different firearm than the one in item 1.
VWFVLQ	Although the class characteristics between QB-1, QB-3, QB-4 and test fires from K-1 were all

TABLE 3

WebCode	Additional Comments
	corresponding, there was sufficient disagreement of individual characteristics. Several of the land impressions in the three test fired bullets and QB-2 had unique course striated marks that reproduced in all. These individual characteristics did not reproduce in QB-1, QB-3, and QB-4.
W7K44C	Items 2, 4, and 5 were determined to be inconclusive because there was not sufficient differences in individual markings to eliminate and all of the class characteristics were similar.
WDN8WV	The quality of the samples was good. The difficulty of the test was appropriate.
WFBNAA	Inconclusive for items 2, 4, and 5: Lab policy does not allow elimination based on individual characteristics. Can only eliminate on class characteristics.
X4BF2R	I am unable to determine if there is potential subclass characteristics near shoulders of TF and evidence samples. Item 3 reveals some agreement to Item 1, however, not sufficient to make identification without examination of firearm and obtaining additional test samples. Items 2 and 4 & 5 reveal similar class characteristics (diameter, weight, and width of land and grooves), however, lack similar individual features. FEEDBACK: Examination of test fired samples provided revealed the firearm did not reproduce well. In actual casework, the precedent would be to examine the firearm and obtain additional test fires. Because this is not an option - I would suggest providing additional samples using different brand(s) of ammunition (if needed). A 2nd suggestion would be to call all samples evidence, which would more adequately mimic casework.
X7G3GG	The projectiles in Items 2, 4 and 5 were fired in the same gun, based on agreement observed in individual characteristics.
X7ZW4D	Based on the general rifling characteristics present, firearms that could have fired Exhibits 2, 4 and 5 would include, but not be restricted to, those manufactured by Astra, Browning, Heckler & Koch, Republic Arms, Ruger, Springfield Incorporated, Taurus and TNW.
XAKR3Y	The bullets in this case did not mark well.
XPTDCV	The unknown bullets identified as Item 2, 4, and 5 were fired by the barrel of one firearm, different from the one that fired the known bullets marked as Item 1."
YRYZPZ	Methods: Pattern Examination: Toolmarks, whether they are present on evidence items or secondary evidence created in the Laboratory, undergo two stages of comparison. First, the class characteristics are reviewed and compared. If the class characteristics of the toolmarks are not clearly different, the examination moves to a second stage using comparative microscopy. A microscopic comparison examination consists of a search of the impressed and striated marks present in two toolmarks to determine if patterns of similarity exist. At the completion of these comparisons, one of the following three opinions is issued: 1) Source Exclusion: Source exclusion is an Examiner's conclusion that two toolmarks did not originate from the same source. This conclusion is an Examiner's opinion that the observed difference(s) in class characteristics provides extremely strong support for the proposition that the two toolmarks came from different sources and extremely weak or no support for the proposition that the two toolmarks came from the same source. A source exclusion based on a minor difference in measured class characteristics requires a verification. 2) Source Identification: Source identification is an Examiner's conclusion that two toolmarks originated from the same source. This conclusion is an Examiner's opinion that all observed class characteristics are in agreement and the quality and quantity of corresponding individual characteristics is such that

TABLE 3

WebCode	Additional Comments
	<p>the Examiner would not expect to find that same combination of individual characteristics repeated in another source. The basis for a source identification conclusion is an Examiner's opinion that the observed class characteristics and corresponding individual characteristics provide extremely strong support for the proposition that the two toolmarks originated from the same source and extremely weak support for the proposition that the two toolmarks originated from different sources. A source identification requires a verification and is the Examiner's opinion that the probability that the two toolmarks were made by different sources is so small that it is negligible. 3) Inconclusive (No Conclusion): Inconclusive is an Examiner's conclusion that all observed class characteristics are in agreement but there is insufficient quality and/or quantity of corresponding individual characteristics such that the Examiner is unable to identify or exclude the two toolmarks as having originated from the same source. This conclusion is an Examiner's opinion that there is an insufficient quality and/or quantity of individual characteristics to identify or exclude. Reasons for an inconclusive conclusion include the presence of microscopic similarity that is insufficient to form the conclusion of source identification, or a lack of any observed microscopic similarity. Limitations: Pattern Examination: Firearms/Toolmark Identification is an empirical science that relies on objective measurements and a subjective comparison of microscopic marks of value. Due to variation in substrate, changes in tool working surfaces from wear, corrosion, and damage, or the employment of unusual tool/work piece orientations, it may not be possible for an Examiner to reach a source conclusion. Additionally, some tool manufacturing methods routinely produce working surfaces that leave limited microscopic marks of value. Damaged, corroded, or fragmented items may be of little or no value for comparison purposes.</p>
YW72VG	The projectiles in Items 2, 4 and 5 were fired from the same gun, based on agreement observed in individual characteristics.
ZL36AQ	The bullets item 2 , item 4 and item 5 were fired by an other same weapon.
ZTJ2R7	Laboratory policy doesn't allow for eliminations to be base on individual characteristics.
ZWNU3R	<p>Methods: Pattern Examination: Toolmarks, whether they are present on evidence items or secondary evidence created in the Laboratory, undergo two stages of comparison. First, the class characteristics are reviewed and compared. If the class characteristics of the toolmarks are not clearly different, the examination moves to a second stage using comparative microscopy. A microscopic comparison examination consists of a search of the impressed and striated marks present in two toolmarks to determine if patterns of similarity exist. At the completion of these comparisons, one of the following three opinions is issued: 1) Source Exclusion: Source exclusion is an Examiner's conclusion that two toolmarks did not originate from the same source. This conclusion is an Examiner's opinion that the observed difference(s) in class characteristics provides extremely strong support for the proposition that the two toolmarks came from different sources and extremely weak or no support for the proposition that the two toolmarks came from the same source. A source exclusion based on a minor difference in measured class characteristics requires a verification. 2) Source Identification: Source identification is an Examiner's conclusion that two toolmarks originated from the same source. This conclusion is an Examiner's opinion that all observed class characteristics are in agreement and the quality and quantity of corresponding individual characteristics is such that the Examiner would not expect to find that same combination of individual characteristics repeated in another source. The basis for a source identification conclusion is an Examiner's opinion that the observed class characteristics and corresponding individual characteristics provide extremely strong support for the proposition that the two toolmarks originated from</p>

TABLE 3

WebCode	Additional Comments
	<p>the same source and extremely weak support for the proposition that the two toolmarks originated from different sources. A source identification requires a verification and is the Examiner's opinion that the probability that the two toolmarks were made by different sources is so small that it is negligible. 3) Inconclusive (No Conclusion): Inconclusive is an Examiner's conclusion that all observed class characteristics are in agreement but there is insufficient quality and/or quantity of corresponding individual characteristics such that the Examiner is unable to identify or exclude the two toolmarks as having originated from the same source. This conclusion is an Examiner's opinion that there is an insufficient quality and/or quantity of individual characteristics to identify or exclude. Reasons for an inconclusive conclusion include the presence of microscopic similarity that is insufficient to form the conclusion of source identification, or a lack of any observed microscopic similarity. Limitations: Pattern Examination: Firearms/Toolmark Identification is an empirical science that relies on objective measurements and a subjective comparison of microscopic marks of value. Due to variation in substrate, changes in tool working surfaces from wear, corrosion, and damage, or the employment of unusual tool/work piece orientations, it may not be possible for an Examiner to reach a source conclusion. Additionally, some tool manufacturing methods routinely produce working surfaces that leave limited microscopic marks of value. Damaged, corroded, or fragmented items may be of little or no value for comparison purposes.</p>

-End of Report-  
(Appendix may follow)

## Test No. 21-5262: Firearms Examination

DATA MUST BE SUBMITTED BY **Dec. 20, 2021, 11:59 p.m.** TO BE INCLUDED IN THE REPORT

Participant Code: U1234A

WebCode: N7BAZX

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:

Police are investigating a homicide that occurred in a parking garage. The victim was shot once and the bullet was recovered by the medical examiner. Investigators also recovered three bullets from the scene. A suspect was apprehended later that day and a Springfield XD-40 handgun was seized from his vehicle. Three rounds of PMC Bronze 40 auto 180 grain FMJ ammunition (consistent with the bullets found at the scene) were test fired from the recovered firearm and the bullets collected. Investigators are asking you to compare the recovered bullets from the victim and scene with those test fired in the recovered firearm and report your findings.

*Please note the following:*

*- Each Item is in a small labeled box, it is suggested that when the items are removed from their labeled boxes, they be marked according to your laboratory procedure. However, in case the items are separated from their boxes before labeling has occurred, each item has been inscribed with its item number.*

*- The bullet stated to have been recovered from the victim was never exposed to biological material.*

### Items Submitted (Sample Pack F2):

Item 1: Three bullets fired using the recovered firearm (known).

Item 2: Bullet recovered from the victim (questioned).

Item 3: First bullet recovered from the scene (questioned).

Item 4: Second bullet recovered from the scene (questioned).

Item 5: Third bullet recovered from the scene (questioned).

**1.) Were any of the recovered questioned bullets (Items 2-5) fired in the same firearm as the known bullets (Item 1)?**

<i>Item 2</i>	Yes <input type="radio"/>	No <input type="radio"/>	Inconclusive* <input type="radio"/>
<i>Item 3</i>	Yes <input type="radio"/>	No <input type="radio"/>	Inconclusive* <input type="radio"/>
<i>Item 4</i>	Yes <input type="radio"/>	No <input type="radio"/>	Inconclusive* <input type="radio"/>
<i>Item 5</i>	Yes <input type="radio"/>	No <input type="radio"/>	Inconclusive* <input type="radio"/>

\*Should an item(s) be marked "Inconclusive", please document the reason in the Additional Comments section of this data sheet.

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

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

**3.) Additional Comments**

## RELEASE OF DATA TO ACCREDITATION BODIES

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

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

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

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

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

ANAB Certificate No.   
(Include ASCLD/LAB Certificate here)

A2LA Certificate No.

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

Authorized Contact Person and Title

Laboratory Name

Location (City/State)