



## **Firearms Examination Test No. 10-526 Summary Report**

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This test was sent to 367 participants. Each sample pack consisted of four questioned fired cartridge cases (Items 2-5) and three known fired cartridge cases (Item 1) test-fired from a suspect weapon. Participants were requested to examine these items and report their findings. Data were returned from 330 participants (90% response rate) and are compiled into the following tables:

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

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

# Manufacturer's Information

Each sample pack contained five items: Item 1 consisted of three cartridge cases fired in the "suspect's weapon". Items 2, 3, 4 and 5 each consisted of one expended cartridge case "recovered from the bank". Federal Cartridge Company American Eagle® .40 S&W 165 grain full metal jacket (FMJ) ammunition was used for all five items. Participants were requested to determine which, if any, of the questioned expended cartridge cases (Items 2-5) were discharged from the same firearm as the known expended cartridge cases.

The expended cartridge cases in Items 1 and 2 were fired in a 40 S&W Springfield Armory XD40 handgun (Serial number US372267). Items 3 and 5 were expended from a 40 S&W Springfield Armory XD Compact handgun (Serial number US487102). Item 4 was expended from a .40 Sig Sauer P226 handgun (Serial number U672227).

## SAMPLE PREPARATION-

Items expended from the three weapons were prepared and packaged separately from each other, and no other firearm was present in the production area other than the one being used to create the immediate items. A water tank, fitted with a cartridge catch net, was used in the firing and recovery of most of the expended cartridges used in this test. Also, an indoor firing range was used in the firing and recovery of some of the expended cartridges used in this test.

ITEM 4 (ELIMINATION): A total of 84 cartridges were loaded into magazines in preparation for shooting with the .40 Sig Sauer P226 handgun. After the 84 cartridges were expended, the cartridge cases were collected and packaged together as a batch in zip top bags. This process was repeated until the required number were produced. Out of each batch, the necessary number of cartridge cases were selected and inscribed with a "4" item number (one cartridge case), then sealed into an Item 4 jewel box.

ITEMS 3 and 5 (ELIMINATION): A total of 84 cartridges were loaded into magazines in preparation for shooting with the 40 S&W Springfield Armory XD Compact handgun. After the 84 cartridges were expended, the cartridge cases were collected and packaged together as a batch in zip top bags. This process was repeated until the required number were produced. Out of each batch, the necessary number of cartridge cases were selected and inscribed with the following item numbers: "3" or "5" (one cartridge case each), then sealed into their respective jewel boxes and kept together as an elimination batch.

ITEMS 1 and 2 (IDENTIFICATION): A total of 84 cartridges were loaded into magazines in preparation for shooting with the 40 S&W Springfield Armory XD40 handgun. After the 84 cartridges were expended, the cartridge cases were collected and packaged together as a batch in zip top bags. This process was repeated until the required number were produced. Out of each batch, the necessary number of cartridge cases were selected and inscribed with the following item numbers: "1" (three cartridge cases) or "2" (one cartridge case), then sealed in their respective jewel boxes and kept together as an association batch.

SAMPLE SET ASSEMBLY: For each sample pack, Items 1 and 2 of the same association batch, Items 3 and 5 of the same elimination batch along with an Item 4 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, 9 cartridge cases from each batch of 84 cartridge cases were randomly selected and intercompared to confirm that markings were consistent within each batch. In addition, laboratories that conducted the predistribution examination of the completed sample sets reported the expected identification and eliminations.

## **Summary Comments**

This test was designed to allow participants to assess their proficiency in a comparison of expended cartridge cases. Participants were provided with four questioned expended Federal Cartridge Company American Eagle® .40 S&W 165 grain full metal jacket (FMJ) cartridge cases (Items 2-5) which they were requested to compare with three known expended cartridge cases (Item 1) fired in the suspect's weapon, a 40 S&W Springfield Armory XD40 handgun. For each sample set, the Item 2 cartridge case was fired in the same firearm that discharged the known expended cartridge cases (Item 1). Items 3 and 5 were fired in a second firearm. Item 4 was fired in a third firearm. [Refer to Manufacturer's Information for production details.]

In Table 1, 315 of 330 responding participants (95%) identified the Item 2 cartridge case as having been fired in the same firearm as the Item 1 cartridge cases, either eliminated (254) or reported "inconclusive" (61) for Items 3 and 5 and either eliminated (211) or reported "inconclusive" (104) for Item 4 as having been fired in the same firearm that produced the test-fired cartridge cases in Item 1. [Many labs will not as a matter of policy eliminate without access to the firearm or when class characteristics match.]

The remaining 15 participants had various responses. Eight of these identified the Items 2, 3, and 5 cartridge cases as having been fired in the same firearm as the Item 1 cartridge cases and either identified (2), eliminated (5) or reported "inconclusive" (1) for Item 4. Three participants identified Items 2 and 4 as having been fired in the same firearm as the Item 1 cartridge cases and eliminated Items 3 and 5. Two participants identified the Items 2 and 5 cartridge cases as having been fired in the same firearm as the Item 1 cartridge cases and eliminated Items 3 and 4. One participant identified the Item 4 cartridge case as having been fired in the same firearm as the Item 1 cartridge cases and eliminated Items 2, 3, and 5. One participant reported "inconclusive" for Item 2 as having been fired in the same firearm as the Item 1 cartridge cases and eliminated Items 3, 4, and 5.

Most participants also reported that Items 3 and 5 had been fired in the same firearm, different from the firearm that expended Items 1 and 2. Many participants noted that a third firearm was involved with the expended cartridge case, Item 4.

# Examination Results

*Were any of the questioned expended cartridge cases (Items 2-5) discharged from the same firearm as the known expended cartridge cases (Item 1)?*

TABLE 1

WebCode	Item 2	Item 3	Item 4	Item 5	WebCode	Item 2	Item 3	Item 4	Item 5
27V38G	Yes	No	No	No	3ZZCHW	Yes	No	No	No
28K9N8	Yes	Inc	Inc	Inc	43Z8CJ	Yes	No	Inc	No
29C8NY	Yes	No	No	No	4CRLFQ	Yes	No	No	No
29FUGY	Yes	No	No	No	4FM9ZD	Yes	No	No	No
2DATQM	Yes	No	Inc	No	4KCDKN	Yes	No	No	No
2FDTJ8	Yes	Inc	Inc	Inc	4LD6V2	Yes	Inc	Inc	Inc
2K3RXH	Yes	No	No	No	4LQEDV	Yes	No	No	No
2LXAZJ	Yes	No	Inc	No	4QA736	Yes	No	Inc	No
2MWRF8	Yes	No	Inc	No	4TBBJ7	Yes	Inc	Inc	Inc
2TKJLF	Yes	No	No	No	4TWUE6	Yes	No	No	No
2VTKWE	Yes	No	No	No	4UN7YW	Yes	No	No	No
2X2WEF	Yes	No	No	No	4ZVEK7	Yes	No	No	No
2YBTVD	Yes	No	No	No	64VN4T	Yes	No	No	No
37MHUX	Yes	No	No	No	6C6EU6	Yes	No	No	No
38HZWY	Yes	No	Inc	No	6CJKP4	Yes	No	Inc	No
3ARVW6	Yes	No	Inc	No	6FHXB8	Yes	No	No	No
3CVQF9	Yes	No	No	No	6J2E37	Yes	No	No	No
3JPZHQ	Yes	Inc	Inc	Inc	6JNV7F	Yes	Inc	Inc	Inc
3N6G3G	Yes	No	No	No	6KUDR4	Yes	No	Inc	No
3NQVTE	Yes	No	No	No	6L8HEN	Yes	No	No	No
3PEDJE	Yes	No	Inc	No	6P9W9L	Yes	Inc	Inc	Inc
3VLVPU	Yes	Inc	Inc	Inc	6PV4RP	Yes	No	No	No
3WHENF	Yes	Inc	Inc	Inc	6Q3LPL	Yes	No	No	No
3ZH47T	Yes	No	No	No	6TLW7C	Yes	No	No	No

TABLE 1

WebCode	Item 2	Item 3	Item 4	Item 5	WebCode	Item 2	Item 3	Item 4	Item 5
6TQLLQ	Yes	No	No	No	9DMDB4	Yes	No	No	No
6XVH6Q	Yes	No	No	No	9EGY4V	Yes	No	Inc	No
6YBGPF	Yes	Inc	Inc	Inc	9MCMJT	Yes	No	No	No
72JNRD	Yes	No	No	No	9MFNMK	Yes	No	No	No
749YH7	Yes	No	No	No	9Q942N	Yes	Inc	Inc	Inc
77BWTY	Yes	No	Inc	No	9T49QZ	Yes	No	No	Yes
7FCFWL	Yes	No	No	No	9WKVN9	Yes	Inc	Inc	Inc
7QL8U3	Yes	No	Inc	No	9WYF3C	Yes	No	Inc	No
7TMVB7	Yes	No	No	No	9XUZ2W	Yes	No	Inc	No
7W6Z6V	Yes	No	No	No	9YGXX2	Yes	No	No	No
7YB4GD	Yes	No	No	No	A94JU8	Yes	No	No	No
7ZY68E	Yes	No	Inc	No	ABXL4M	Yes	No	No	No
83N2LE	Yes	No	No	No	AGLBH6	Yes	No	No	No
87QFDW	Yes	No	Inc	No	AHANK3	Yes	Inc	No	Inc
8AAQ7U	Yes	No	No	No	AMQNGT	Yes	No	No	No
8GQ2LF	Yes	No	No	No	AN287C	Yes	No	No	No
8JU2FL	Yes	No	Inc	No	ARG6GE	Yes	No	No	No
8LWV36	Yes	Yes	No	Yes	ARMRFM	Yes	No	No	No
8MFLPV	Yes	Inc	Inc	Inc	AU6ZEL	Yes	Inc	Inc	Inc
8NDFFU	Yes	No	No	No	AXTPKK	Yes	No	No	No
8TF2YC	Yes	No	Inc	No	AYHZBD	Yes	Inc	Inc	Inc
8V6GED	Yes	No	No	No	AZDAUV	Yes	Inc	No	Inc
8Z4N8N	Yes	No	No	No	B6Z8CC	Yes	No	No	No
92UBWW	Yes	No	No	No	B72CE7	Yes	No	No	No
93DGTV	Yes	Inc	Inc	Inc	B7V9CE	Yes	Inc	Inc	Inc
96T9G3	Yes	No	No	No	BALRXR	Yes	No	No	No
96V8NC	Yes	Inc	Inc	Inc	BAY3D6	Yes	No	Inc	No

TABLE 1

WebCode	Item 2	Item 3	Item 4	Item 5	WebCode	Item 2	Item 3	Item 4	Item 5
BBCPW6	Yes	No	No	No	DGRFA6	Yes	No	No	No
BDK7JV	Yes	No	Inc	No	DH4X4F	Yes	Inc	Inc	Inc
BQ4AR8	Yes	No	No	No	DNVEZK	Yes	No	No	No
BQKGL3	Yes	No	No	No	DYDWRR	Yes	Inc	Inc	Inc
BWCBP2	Yes	No	No	No	E6947C	Yes	No	No	No
BXMMEC	Yes	Inc	Inc	Inc	E72E6E	Yes	No	No	No
BZWHCX	Yes	Inc	Inc	Inc	E76TUK	Yes	No	No	No
C2CQKV	Yes	No	No	No	EBFGDB	Yes	No	No	No
C498TC	Yes	No	No	No	EGNPYL	Yes	Inc	Inc	Inc
C4QURU	Yes	No	No	No	ET3QER	Yes	Inc	Inc	Inc
C89BMK	Yes	No	No	No	EUDNPN	Yes	No	No	No
C9E6GD	No	No	Yes	No	EXDVBL	Yes	No	No	No
CCXVNE	Yes	No	Inc	No	F8KCEH	Yes	Inc	Inc	Inc
CH4TE2	Yes	Inc	Inc	Inc	F9AHFM	Yes	No	No	No
CJZRNE	Yes	No	No	No	FA449E	Yes	No	Yes	No
CP7F88	Yes	No	Inc	No	FAE7JR	Yes	No	Inc	No
CQK6BK	Yes	No	Inc	No	FEEXP3	Yes	Inc	Inc	Inc
CU6PKV	Yes	No	No	No	FJ89B3	Yes	No	No	No
CXZTZF	Yes	No	No	No	FJMMKX	Yes	No	No	No
CZ7AHJ	Yes	No	Inc	No	FJZ8Z2	Yes	Inc	Inc	Inc
CZG6Q6	Yes	Inc	Inc	Inc	FU9TDV	Yes	No	No	No
CZPBLT	Yes	No	Inc	No	FX787C	Yes	No	No	No
D3PJXB	Yes	Yes	Inc	Yes	G2N8YH	Yes	No	Inc	No
DBLBJC	Yes	No	Inc	No	G63AZB	Yes	No	No	No
DC3CLD	Yes	No	No	No	G7VDDJ	Yes	Inc	Inc	Inc
DGBZV9	Yes	No	Inc	No	GCXKMR	Yes	No	No	No
DGNN32	Yes	No	No	No	GF7ZMP	Yes	No	No	No

TABLE 1

WebCode	Item 2	Item 3	Item 4	Item 5	WebCode	Item 2	Item 3	Item 4	Item 5
GFHA6J	Yes	Yes	No	Yes	KDLZYY	Yes	No	No	No
GPKU8C	Yes	No	No	No	KFBPR	Yes	No	No	No
GVFBBQ	Yes	Yes	Yes	Yes	KJC6XV	Yes	No	No	No
GWUTCC	Yes	No	No	No	KJWVY3	Yes	No	No	No
GXPW3J	Yes	No	No	No	KKPYCA	Yes	No	No	No
H4LPE6	Yes	No	No	No	KL3BEL	Yes	Inc	Inc	Inc
H9LWZ3	Yes	No	No	No	KPQBUZ	Yes	No	Inc	No
HBNLE4	Yes	No	No	No	KY64J3	Yes	Inc	Inc	Inc
HE72NW	Yes	No	No	No	L2NEYU	Yes	No	No	No
HEYD7C	Yes	No	No	No	L3DKEK	Yes	Inc	Inc	Inc
HJ3P64	Yes	No	Inc	No	L64TRU	Yes	No	No	No
HL4Q8L	Yes	Inc	Inc	Inc	LCMCJ9	Yes	No	Yes	No
HMKR93	Yes	No	No	No	LF46N3	Yes	No	No	No
HMXCZC	Yes	No	No	No	LNWXXZ	Yes	No	No	No
HZ7ZBV	Yes	No	No	No	LYN3F2	Yes	No	No	No
JG7K9A	Yes	No	No	No	M2FULB	Yes	No	No	No
JHHRAC	Yes	No	No	No	M67TF2	Yes	No	Inc	No
JHVU3J	Yes	Yes	No	Yes	M78NC4	Yes	No	No	No
JQFX76	Yes	No	No	No	MCPLJQ	Yes	No	No	Yes
JRAJYW	Yes	No	Inc	No	MGHLZ8	Yes	No	No	No
JRTLNJ	Yes	No	No	No	MGJXKC	Yes	No	No	No
JT3Y92	Yes	No	No	No	MH48Z3	Yes	Inc	Inc	Inc
JX2UUAU	Yes	No	No	No	MHU3XZ	Yes	No	No	No
JZQEEJ	Yes	No	No	No	MRKF4R	Yes	No	No	No
K3XP6T	Yes	Inc	Inc	Inc	MTBV32	Yes	No	Inc	No
K78ZH3	Yes	No	Inc	No	MTC3P9	Yes	No	No	No
KD8BVM	Yes	No	No	No	MU4724	Yes	No	No	No

TABLE 1

WebCode	Item 2	Item 3	Item 4	Item 5	WebCode	Item 2	Item 3	Item 4	Item 5
MXGF27	Yes	Inc	Inc	Inc	QV2F7A	Yes	No	No	No
N47CDN	Yes	No	No	No	QVMNWR	Yes	No	No	No
NE7DVU	Yes	Yes	No	Yes	QY6YMG	Inc	No	No	No
NJG39F	Yes	No	No	No	R3VKYB	Yes	No	No	No
NKGJLJ	Yes	Inc	Inc	Inc	R69B6Y	Yes	Inc	Inc	Inc
NNLXXH	Yes	No	No	No	R7JLXQ	Yes	No	No	No
NRELXQ	Yes	No	No	No	REGTUJ	Yes	No	No	No
NT6ZWZ	Yes	No	No	No	RPAGJR	Yes	No	No	No
NWBC43	Yes	No	No	No	RQ4L2Z	Yes	No	No	No
P3PKWQ	Yes	Inc	No	Inc	RVF2GW	Yes	No	Inc	No
P7QAE6	Yes	No	No	No	RXVQBF	Yes	No	No	No
P8KH6U	Yes	No	No	No	T3D2LG	Yes	No	No	No
P9FRMC	Yes	No	No	No	T8RQ9Y	Yes	Inc	Inc	Inc
PCWN7P	Yes	No	No	No	TFZHZG	Yes	No	Inc	No
PDLL42	Yes	No	Yes	No	TJNTCT	Yes	No	No	No
PEF3AQ	Yes	No	No	No	TLKHD9	Yes	No	No	No
PH3ZW2	Yes	No	Inc	No	TP873F	Yes	No	Inc	No
PL2EKQ	Yes	No	No	No	TYV4RY	Yes	Inc	Inc	Inc
PN8UYA	Yes	Inc	Inc	Inc	TYVZJH	Yes	No	No	No
PUX4A9	Yes	Inc	Inc	Inc	U2DJVZ	Yes	Inc	Inc	Inc
PXJPJH	Yes	No	Inc	No	U46YCH	Yes	No	No	No
PYQDBT	Yes	No	No	No	U6KR9Q	Yes	No	No	No
Q2ZWDG	Yes	No	No	No	U7PFEF	Yes	No	No	No
Q74G2T	Yes	No	No	No	UBNKGZ	Yes	Inc	Inc	Inc
QA6KVZ	Yes	No	No	No	UDXLL8	Yes	Inc	Inc	Inc
QCNVBR	Yes	No	No	No	UNUMTH	Yes	No	No	No
QHCFE8	Yes	Yes	Yes	Yes	URB2LH	Yes	No	No	No

TABLE 1

WebCode	Item 2	Item 3	Item 4	Item 5	WebCode	Item 2	Item 3	Item 4	Item 5
UT3B3D	Yes	No	No	No	XBAATX	Yes	No	No	No
UT7JNJ	Yes	No	No	No	XEHU3Y	Yes	No	No	No
UYFVPQ	Yes	No	No	No	XF86UQ	Yes	No	No	No
V3DRRQ	Yes	No	No	No	XFTW83	Yes	No	Inc	No
V443HJ	Yes	No	No	No	XHA36J	Yes	No	No	No
V6AGVQ	Yes	No	Inc	No	XLWL7G	Yes	No	No	No
V742NH	Yes	No	No	No	XMR8Y9	Yes	No	No	No
VCUKWR	Yes	No	No	No	XRBL98	Yes	No	No	No
VDFDA4	Yes	Inc	Inc	Inc	XVM2HZ	Yes	No	No	No
VEY8GJ	Yes	No	No	No	XWTJ4P	Yes	No	No	No
VJF9ZA	Yes	No	No	No	XZTVYP	Yes	No	No	No
VJFHJU	Yes	No	No	No	Y6E8BW	Yes	Inc	Inc	Inc
VNM3GY	Yes	No	No	No	Y7XD4E	Yes	No	No	No
VNPUJZ	Yes	No	No	No	Y8QTCJ	Yes	No	No	No
VPHLHZ	Yes	Inc	Inc	Inc	YBW9UN	Yes	No	No	No
VPKCL3	Yes	Inc	Inc	Inc	YC27UH	Yes	No	No	No
VTEX8R	Yes	No	No	No	YD3UJ9	Yes	No	No	No
VVAPMP	Yes	No	No	No	YDXDAP	Yes	No	No	No
VZ4ME3	Yes	No	No	No	YEMAPP	Yes	No	No	No
W2UA4B	Yes	No	No	No	YEWFCZ	Yes	No	No	No
W42R27	Yes	Inc	Inc	Inc	YG9NZX	Yes	No	Inc	No
W4LU7E	Yes	No	No	No	YH3AUP	Yes	Inc	Inc	Inc
WA3ZCF	Yes	No	No	No	YQWEMQ	Yes	Inc	Inc	Inc
WDNQQQ	Yes	No	No	No	YU6BP8	Yes	No	No	No
X4ECUG	Yes	No	No	No	YUNAPQ	Yes	Inc	Inc	Inc
X6K3GX	Yes	Inc	Inc	Inc	YVKTQR	Yes	Inc	Inc	Inc
XA46GF	Yes	No	No	No	YX8CRP	Yes	No	No	No

TABLE 1

WebCode	Item 2	Item 3	Item 4	Item 5	WebCode	Item 2	Item 3	Item 4	Item 5
YYV47F	Yes	Inc	Inc	Inc					
YZDUT7	Yes	No	No	No					
YZQM8G	Yes	No	No	No					
Z2JKQA	Yes	No	No	No					
Z2ZTHP	Yes	No	Inc	No					
Z38C6Y	Yes	No	No	No					
Z43U8Z	Yes	Yes	No	Yes					
ZDTG9H	Yes	No	No	No					
ZE7DXP	Yes	No	No	No					
ZEBPW7	Yes	No	No	No					
ZGAL47	Yes	Inc	Inc	Inc					
ZMVTBD	Yes	No	Inc	No					

Response Summary		Participants: 330			
<i>Were any of the questioned expended cartridge cases (Items 2-5) discharged from the same firearm as the known expended cartridge cases (Item 1)?</i>					
<b>Responses</b>		<u>Item 2</u>	<u>Item 3</u>	<u>Item 4</u>	<u>Item 5</u>
	Yes	<b>328 (99%)</b>	<b>8 (2%)</b>	<b>6 (2%)</b>	<b>10 (3)%</b>
	No	<b>1 (0%)</b>	<b>261 (79%)</b>	<b>219 (66%)</b>	<b>259 (78)%</b>
	Inc	<b>1 (0%)</b>	<b>61 (18%)</b>	<b>105 (32%)</b>	<b>61 (18)%</b>

\* See Conclusions (Table 2) and/or Additional Comments (Table 3).

# Conclusions

TABLE 2

WebCode	Conclusions
27V38G	Exhibit 1 consists of three (3) caliber .40 S&W cartridge cases, Federal brand. These cartridge cases, allegedly test fired from the recovered pistol, were microscopically examined and inter-compared. There is agreement of all discernible class characteristics and sufficient agreement of individual microscopic markings to identify them as having been fired in the same firearm. Exhibit 2 is a caliber .40 S&W cartridge case, Federal brand. This cartridge case was microscopically examined and compared to the Exhibit 1 test fires. There is agreement of all discernible class characteristics and sufficient agreement of individual microscopic markings to identify it as having been fired from the same firearm which fired the Exhibit 1 cartridge cases. Exhibits 3 and 5 are two (2) caliber .40 S&W cartridge cases, Federal brand. These cartridge cases were microscopically examined and compared. There is agreement of all discernible class characteristics and sufficient agreement of individual microscopic markings to identify them as having been fired in the same firearm. Due to significant disagreement of individual microscopic markings, Exhibits 3 and 5 were not fired in the same firearm which fired the Exhibits 1 and 2 cartridge cases.
28K9N8	One of the submitted cartridge cases (item 2) was fired from the suspect's Springfield Armory XD40 pistol. The second submitted cartridge case (item 4) has some indications that it was fired from the suspect's Springfield Armory XD40 pistol. However, there were insufficient surviving marks on item 4 to permit an identification. The last two submitted cartridge cases (items 3 and 5) were fired from the same firearm. There are strong indications that items 3 and 5 were not fired from the suspect's Springfield Armory XD40 pistol, but they cannot be excluded.
29C8NY	Item 2 was identified as having been fired in the same firearm as items 1; however not the same unknown firearm that fired items 3 & 5 and not the same unknown firearm that fired item 4. Items 3 & 5 were fired in the same unknown firearm. Item 4 was not fired in the same firearm as items 3 & 5.
29FUGY	1) Item 2 (M) was fired in the same firearm as Item 1. 2) Item 3 (N) and Item 5 (P) were fired in a second .40 S&W pistol. 3) Item 4 (O) was fired in a third .40 S&W pistol.
2DATQM	Item #2 was fired in the same firearm that fired Item #1. Items #3 and #5 were fired in the same firearm. Items #3 and #5 were not fired in the same firearm that fired Item #1. Item #4 was compared to Item #1 with no identification or elimination being made; however, differences exist that are indicative of another firearm being involved. Item #4 was compared to Items #3 and #5 with no identifications or eliminations being made; however, differences exist that are indicative of another firearm being involved.
2FDTJ8	Items 2 through 5 are .40 S&W caliber cartridge cases bearing the headstamp of Federal. The Item 2 cartridge case was identified as having been fired in the same firearm as the Item 1 test-fired cartridge cases. The Item 3 and Item 5 cartridge cases were identified as having been fired in a single firearm that is not necessarily the same firearm that the Item 1 and Item 2 cartridge cases were fired in. Due to a lack of sufficient corresponding microscopic marks of value or a lack of conflicting class characteristics, all other intercomparison results are inconclusive.
2K3RXH	Cartridge case marked Item 2 was fired in the same firearm that fired the three cartridge cases marked Item 1. Cartridge cases marked Item 3 and 5 were fired in the same firearm but were not fired in the same firearm that fired the three cartridge cases marked Item 1 (second firearm). Cartridge case marked Item 4 was not fired in the same firearm that fired the three cartridge cases marked Item 1 (third firearm).

TABLE 2

WebCode	Conclusions
2LXAZJ	1. Exhibit 2 was fired in the same firearm as Exhibit 1. 2. Exhibits 3 & 5, were not fired in the same firearm as Exhibit 1. They were both fired in the same unknown firearm. 3. Exhibit 4 can not be identified or eliminated as having been fired in the same firearm as Exhibit 1.
2MWRF8	The Item 2, 3, 4 and 5 fired cartridge cases were compared to the Item 1 tests and to each other. Item 2 was determined to have been fired in the same firearm as the tests. Items 3 and 4[sic] were determined to have been fired in the same firearm, but NOT the same firearm that fired the Item 1 tests. Item 4 could neither be identified nor eliminated as having been fired in the same firearm as the Item 1, 2, 3 or 4 cartridge cases.
2TKJLF	The spent cartridge case listed as Item #2 has been identified as having been fired in the same firearm as the three (3) spent cartridge cases listed as Item #1. The spent cartridge case listed as Item #3 has been identified as having been fired in the same firearm as the spent cartridge case listed as Item #5. But, these spent cartridge cases were not fired in the same firearm as the three (3) spent cartridge cases listed as Item #1. The spent cartridge case listed as Item #4 was not fired in the same firearm as the three (3) spent cartridge cases listed as Item #1, nor the same firearm as those spent cartridge cases listed as Items #3&5. The unidentified spent cartridge cases, designated Items #3-5, will be held in evidence at the Crime Lab for comparison, when the suspect firearms are located.
2VTKWE	Casts of Exhibits 1 through 5 were made to facilitate comparison. Exhibits 1 through 5 were microscopically compared with each other with the following results: Based on significant correspondence of individual firearm produced marks, Exhibits 1 and 2 were fired in the same firearm. Based on significant correspondence of individual firearm produced marks, Exhibits 3 and 5 were fired in the same firearm. Based on significant differences of individual firearm produced marks, Exhibits 3 and 5 were not fired in the same firearm that fired Exhibits 1 and 2. Based on significant differences of individual firearm produced marks, Exhibit 4 was not fired in the firearms that fired Exhibits 1, 2, 3 and 5.
2X2WEF	Items 2 through 5 consist of four (4) caliber .40 S&W fired cartridge cases, Federal brand. Items 2 though[sic] 5 were examined and microscopically compared to the Item 1 test fired cartridge cases. There exists sufficient agreement among the individual characteristics between Item 1 and Item 2 to identify them as having been fired in the same firearm. Due to a difference in both class and individual characteristics, Items 3, 4, and 5 were eliminated as having been fired in the same firearm as the Item 1 test fired cartridge cases. There exists sufficient agreement among the individual characteristics between Item 3 and Item 5 to identify them as having been fired in the same firearm. Due to a difference in both class and individual characteristics, Item 4 was eliminated as having been fired in the same firearm as Items 3 and 5.
2YBTVD	On comparison, I found: (i) The characteristic marks on the recovered casing Item 2 to match those on the test-fired casings Item 1. (ii) The characteristic marks on the recovered casings Item 3, Item 4 and Item 5 not to match those on the test-fired casings Item 1. Hence, I am of the opinion that the recovered casing Item 2 was fired by the .40 S&W Springfield Armory XD 40 handgun.
37MHUX	Ex. 1 C/C's (+) to Ex. 2 as having been fired in the same F/A due to corresponding individual characters observed in the BFM. Ex 2 & Ex. 1 (-) to Ex. 3, 4, & 5 as having been fired in the same F/A due to a lack of corresponding individual characteristics. Ex. 3 (+) to Ex. 5 as having been fired in the same F/A due to corresponding individual characteristics observed in the BFM. Ex. 3 & Ex. 5 (-) to Ex. 4 as having been fired in the same F/A due to a lack of corresponding individual characteristics.
38HZWY	The Item 2 cartridge case was identified as having been fired in the same firearm as the Item

TABLE 2

WebCode	Conclusions
	1 cartridge cases (listed as tests from suspect's Springfield Armory pistol). The Item 3 and Item 5 cartridge cases were identified as having been fired in the same unknown firearm (different than Items 1 and 2). Although the Item 4 cartridge case cannot be conclusively eliminated from either of the two groups above, differences in individual characteristics indicate it may represent a third firearm.
3ARVW6	The Item 1 three fired .40 S&W caliber Federal cartridge cases were verified as having been fired in the same firearm. The Item 1 cartridge cases were compared to the Items 2 through 5 fired .40 S&W caliber Federal cartridge cases. Item 2 was determined to have been fired in the same firearm that fired Item 1. Items 3 and 5 were determined to have not been fired in the same firearm that fired Item 1. However, Items 3 and 5 were compared to each other and were determined to have been fired in the same second firearm. The Item 4 cartridge case could neither be identified nor eliminated as having been fired in either firearm that fired the other groups of cartridge cases.
3CVQF9	Microscopic comparison shows that the fired cartridge case of Item 2 was fired in the same firearm that fired the known cartridge cases of Item 1. Microscopic comparison shows that the fired cartridge cases of Items 3 and 5 were fired in the same firearm, but a different firearm than the one which fired Items 1 and 2. Microscopic comparison shows that the fired cartridge case of Item 4 was not fired in the same firearm as Items 1 and 2.
3JPZHQ	One of the cartridge cases (item #2) is identified as having been fired in the same firearm as the test shots (item #1). Two of the remaining cartridge cases (items #3 and #5) are identified as having been fired in the same firearm. They could not be identified or eliminated as having been fired in the same firearm as the test shots (item #1). Item #4 could not be identified or eliminated as having been fired in the same firearm as the test shots, or any of the other submitted cartridge cases.
3N6G3G	Item 2 was identified as having been fired in the same firearm as Item 1. Items 3 and 5 were identified as having been fired in a second unknown firearm. Item 4 was eliminated as having been fired in the same firearm as Item 1 or Items 3 and 5.
3NQVTE	K1 - caliber .40 S&W Springfield Armory semi-automatic pistol, model XD-40 (Item 1). QC1 - cartridge case (Item 2). QC2 - cartridge case (Item 3). QC3 - cartridge case (Item 4). QC4 - cartridge case (Item 5). The submitted specimens marked QC1 through QC4 were examined and identified as four (4) fired caliber .40 S&W cartridge cases bearing the Federal headstamp. QC1 through QC4 were microscopically compared to the test cartridge cases of K1 (Item 1). As a result of microscopic examination it was concluded that QC1 was identified as having been fired in K1 (Item 1). Although, similar in characteristics of K1, QC2 and QC4 were identified as having been fired in a second firearm. QC3 has similar characteristics of all the above items however, this item was fired in a third firearm.
3PEDJE	FCC1 (Item #2) was fired in P1 (Item #1). FCC2 (Item #3) and FCC4 (Item #5) were fired in the same firearm, not P1. FCC3 (Item #4) displays insufficient microscopic markings to permit a positive identification against P1, FCC2 and FCC4.
3VLVPU	#2 was fired in #1. #3 and #5 were fired in the same firearm. #3, #4, & #5 could not be identified or eliminated as being fired in #1.
3WHENF	The ctg case in sub 2 was microscopically compared to test fired ctg cases in sub 1 and found to have suff. indiv. char. to conclude an identification. Therefore sub 2 was fired from sub 1. The ctg cases in sub 3, 4, & 5 were microscopically compared to test fired ctg cases in sub 1 and found to have similar class characteristics. Further analysis failed to reveal an identification. Therefore sub 3, 4, and 5 could not be identified or excluded. The ctg cases

TABLE 2

WebCode	Conclusions
	in sub 3 and sub 5 were microscopically compared to each other and found to have sufficient individual characteristics to conclude an identification. Therefore sub 3 and 5 were fired in the same firearm.
3ZH47T	One of the four expended 40 S&W cartridge cases (Item 2) was identified as fired in the same firearm as the submitted test fires (Item 1). The three remaining expended 40 S&W cartridge cases (Items 3-5) were each fired in a different firearm. No two cartridge cases from the scene were fired in a single firearm.
3ZZCHW	Item #1 contains three (3) test fired cartridge cases. Items #1, #2, #3, #4, and #5 were microscopically intercompared with each other. Based on these comparisons, in my opinion, the fired cartridge cases from #1 and #2 were identified as having been fired in the same firearm. Items #3 and #5, in my opinion, were identified as having been fired in the same firearm, but a different firearm than fired #1, #2, or #4. Item #4 is excluded from having been fired in the firearm that fired #1 and #2 and excluded from having been fired in the same firearm that fired #3 and #5.
43Z8CJ	The Q-1 and T-1, T-2, T-3 cartridge cases were fired in the same pistol. The Q-2 and Q-4 cartridge cases were fired in the same firearm but not the same firearm as Q-1, T-1, T-2 and T-3. The Q-3 and T-1, T-2, T-3 cartridge cases exhibit the same class characteristics and a few microscopic similarities. However, there is insufficient microscopic agreement to conclusively determine if Q-3 and T-1, T-2, T-3 were or were not fired in the same firearm. The T-3, Q-3 and Q-4 fired cartridge cases were entered into the Integrated Ballistics Identification System (IBIS). Additional reports will follow if any forensic leads are developed.
4CRLFQ	Item 2 was fired by the Springfield Armory Model XD40 .40 S&W caliber pistol. Item 3 & 5 were fired by a second firearm. Item 4 was fired by a third firearm.
4FM9ZD	There was sufficient firing detail present on case 2 to suggest it had been fired in same weapon as test cases 1. Cases 3 & 5 had sufficient firing detail present to indicate that they had been fired from the same weapon, but not the one that fired cases 1 & 2. The item 4 had been fired from a third weapon and not from the either of the two weapons described above.
4KCDKN	1. The expended cartridge case mentioned in item 2 was discharge[sic] by the same firearm that discharged the three expended cartridge mentioned in item 1 (suspect weapon). 2. The expended cartridge case mentioned in item 3 and the expended cartridge case mentioned in item 5 were discharged by the same firearm. Not by suspect's weapon. The expended cartridge case mentioned in item 4 wasn't discharged by any of the firearm that discharge[sic] the expended cartridge case mentioned in item 1, 2, 3 and 5.
4LD6V2	Item #2 was fired in the same firearm as Item #1 (test dccc). Item #4 could not be associated with Items #1 (test dccc), #2, #3, or #5 by the use of toolmarks. Items #3 and #5 could not be associated with Items #1 (test dccc), #2, or #4 by the use of toolmarks.
4LQEDV	Item 2 was fired in the same FA as the Item 1 tests. Item 3 & 5 were fired in the same unknown FA. They were eliminated as having been fired in the same firearm as the Item 1 tests. Item 4 was eliminated as having been fired in the same firearm as the Item 1 tests. Item 4 was eliminated as having been fired in the same unknown firearm as Items 3 & 5.
4QA736	Item 2 was fired in the suspect's 40 S&W Springfield Armory XD40. Items 3 and 5 were fired in the same firearm; however, it was a different firearm than the suspect's 40 S&W Springfield Armory XD40. Item 4 exhibits differences in extractor, ejector and breechface marks, from the test fires and item 2 and was most likely fired from a different weapon; however, no gun is available to confirm an exclusion.

TABLE 2

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4TBBJ7	The Item 1 and Item 2 cartridge cases were fired in the same firearm. The Item 1 through Item 5 fired cartridge cases have the same class characteristics, however, there are no microscopic indications that the firearm that fired Item 1 and Item 2 fired Items 3 and 5 or Item 4. The Item 3 and Item 5 cartridge cases were fired in the same firearm. There are no microscopic indications that the firearm that fired Item 3 and Item 5 fired Item 4. There are no microscopic indications that the firearm that fired Item 4 fired Items 1 and 2 or Items 3 and 5.
4TWUE6	Microscopic comparisons of evidence .40 S&W cartridge cases Items 2 through 5 with test fired cartridge cases from suspect Springfield Armory firearm Item 1 and against each other has revealed the following: Evidence cartridge case Item 2 was fired with suspect Springfield Armory firearm Item 1. Evidence cartridge cases Items 3 and 5 were fired with the same unknown firearm; not Item 1 due to differences in individual breechface and firing pin markings present. Evidence cartridge case Item 4 was not fired with suspect firearm Item 1 due to differences in individual breechface and firing pin markings present. Additionally, Item 4 cannot be identified or eliminated as having been fired with the same firearm as Items 3 and 5 due to similarities in class characteristics but insufficient agreement of individual characteristics present.* Should any additional firearms be received please submit in reference to the above number.
4UN7YW	1) Casing M was fired in the submitted .40 S&W Springfield Armory pistol. 2) Casings N and P were fired in a second .40 S&W caliber weapon. 3) Casing O was fired in a third .40 S&W caliber weapon.
4ZVEK7	The Item 2 cartridge case matched the cartridge cases reportedly discharged by the Springfield Armory pistol, Item 1. The Item 1 and Item 2 cartridge cases were discharged by the same firearm. The Item 3 and Item 5 cartridge cases matched each other and were discharged by the same firearm. This firearm is different from the firearm that discharged the Item 1 and Item 2 cartridge cases. The Item 4 cartridge case was discharged by a firearm different from the ones that discharged the Item 1, Item 2, Item 3 and Item 5 cartridge cases.
64VN4T	I compared the test fired cartridge cases, Item 1, from the Springfield Armory XD40 pistol to the cartridge case, Item 2, and found sufficient corresponding individual microscopic marks to conclude that they were all fired in a single firearm. I compared the cartridge case, Item 4, to the other cartridge cases in this case, Items 2; 3 & 5 and found differences in class marks to conclude that the firearm that fired Item 4 did not fire the other cartridge cases in this case. I compared the cartridge cases, Item 3 and Item 5, to each other and found sufficient corresponding individual microscopic marks to conclude that they were all fired in a single firearm.
6C6EU6	[No Conclusions Reported.]
6CJKP4	Fired cartridge case, Item 2, was fired in the same firearm identified to have produced the test cartridge cases, Item 1. Fired cartridge Item 4, exhibited similarities to the test cartridges, but lack the detail to be conclusively identified to the test firearm. Fired cartridge cases, Items 3 and 5, were fired in the same firearm but not the firearm identified as the source of the test cartridge cases, Item 1.
6FHXB8	1. Class and accidental characteristics on the fired cartridge case, Exhibit 2 and the test fired cartridge cases, from the XD40 handgun, Exhibit 1 were observed to be in agreement. The cartridge case Exhibit 2 was identified as having been fired in the XD40 handgun of Exhibit 1. 2. Class and accidental characteristics on the fired cartridge cases, Exhibits 3 and 5 were observed to be in agreement. Accidental characteristics were not in agreement with the test

TABLE 2

WebCode	Conclusions
	fired cartridge cases, from the XD40 handgun, Exhibit 1. The cartridge cases, Exhibits 3 and 5 were eliminated as having been fired in the XD40 handgun of Exhibit 1, however were identified as having been fired in a second firearm. 3. Accidental characteristics on the fired cartridge case, Exhibit 4 were not in agreement with the test fired cartridge cases, from the XD40 handgun, Exhibit 1 and were not in agreement with accidental characteristics on the fired cartridge cases, Exhibits 3 and 5. The cartridge case, Exhibit 4 was eliminated as having been fired in the XD40 handgun of Exhibit 1. The cartridge case Exhibit 4 was also eliminated as having been fired in the second firearm used to discharge the cartridge cases, Exhibits 3 and 5 indicating the involvement of a third firearm.
6J2E37	All 4 seized CCs (items 2-5) demonstrate same class markings as the reference items 1. Based on individual markings of the seized CCs we were able to discriminate 3 different FAs. Item 2 could be positively identified back to the seized FA (Item 1). Items 3&5, however, were fired from the same FA but not from Item 1. Item 4 was fired from yet another FA.
6JNV7F	The cartridge case in Item 2 was identified as having been fired in the same firearm as the cartridge cases in Item 1. The cartridge case in Item 3 was identified as having been fired in the same firearm as the cartridge case in Item 5. The cartridge cases in Items 3 and 5 could not be identified or excluded as having been fired in the same firearm as the cartridge cases in Items 1 and 2 due to different individual characteristics. The cartridge case in Item 4 could not be identified or excluded as having been fired in the same firearm as any of the cartridge cases in Items 1-3 and 5 due to the insufficient quality and quantity of individual characteristics.
6KUDR4	The recovered fired cartridge cases, Items 2, 3, 4 and 5 were examined and the marks transferred to them by firearm components during the firing process were compared to the marks on the cartridges tests[sic] fired from the pistol, Item 1, using a comparison microscope. There is sufficient agreement of class and individual characteristic marks to conclude that the fired cartridge case, Item 2 had been fired from the pistol, Item 1. The cartridges Items 3 and 5 had been fired in the same gun, but there is sufficient disagreement of individual characteristic marks to conclude that they had not been fired from the Pistol, Item 1.
6L8HEN	1. The spent casing in Item #3 and the spent casing in Item #5 are .40sw caliber and were fired by the same firearm. 2. The spent casing in Item #4 is 40sw caliber and was fired by a firearm of the same caliber.
6P9W9L	Microscopic comparisons of Item #2 with the test fired cartridge cases from Item #1 revealed matching breech face marks and firing pin impressions. This finding confirms that Item #2 was fired from the same firearm as the test fired cartridge cases from Item #1. Microscopic comparison of Item #3 with Item #5 revealed matching breech face marks and firing pin impressions. This finding confirms Items #3 & 5 were fired from the same firearm. Microscopic comparisons of Items #3 & 5 with the test fired cartridge cases from Item #1 revealed corresponding class characteristics (caliber, breech face style, firing pin style). This finding indicates that Items #3 & 5 could have been fired from the same firearm as the test fired cartridge cases from Item #1. However, there is no indication that these groups were fired from the same firearm. Microscopic comparisons of Item #4 with Items #3 & 5 and the test fired cartridge cases from Item #1 revealed corresponding class characteristics (caliber breech face style, firing pin style). This finding indicates that Item #4 could have been fired from Item #1. However, there is no indication that Item #4 was fired from the same firearm as Item #1 or Items #3 & 5.
6PV4RP	Microscopic comparison of Item 2, the fired Federal brand 40 S&W caliber cartridge case, and the test-fired cartridge cases submitted as Item 1 identified Item 2 as having been fired in

TABLE 2

WebCode	Conclusions
	the same firearm as Item 1. Similar microscopic comparisons were made with Items 1, 3, 4, and 5 and it was determined that Items 3, 4 and 5 are eliminated as having been fired in the same firearm as Item 1. Items 3 and 5 were identified as both having been fired in a second firearm, and Item 4 was eliminated has[sic] having been fired in the same firearm as Items 3 and 5.
6Q3LPL	It is reported that the three fired cartridge cases in Item 1 were fired in a Springfield Armory XD40 .40 S&W caliber pistol. Item 2, a cartridge case collected from the scene, has been identified as having been fired in the Springfield pistol. Items 3 and 5, fired cartridge cases collected at the scene, were identified as having been fired in the same firearm; however, they were not fired in the recovered firearm (the Springfield pistol). Item 4, a fired cartridge case collected at the scene, was eliminated as having been fired from the Springfield pistol.
6TLW7C	The fired 40 caliber cartridge case in item 2 was determined to have been fired in the same weapon as the three (3) fired 40 caliber cartridge cases in item 1. The three (3) fired 40 caliber cartridge cases in items 3, 4, and 5 were determined not to have been fired in the same weapon as the three (3) fired 40 caliber cartridge cases in item 1.
6TQLLQ	Physical and microscopic examinations of the submitted evidence were conducted. As a result of those examinations, it is my opinion that: A/ The Item 1-2 (Item 2) .40 caliber discharged cartridge casing was fired from the .40 S&W caliber Springfield Armory model XD40 semi-automatic pistol. B/ The Items 1-3(Item 3) and 1-5(Item 5) .40 caliber discharged cartridge casings were both fired by the same unknown weapon, but not the .40 S&W caliber Springfield Armory model XD40 semi-automatic pistol that fired the Item 1-1 (Item 1) .40 caliber discharged cartridge casings. C/ The Item 1-4 .40 caliber discharged cartridge casing was not fired by the .40 S&W caliber Springfield Armory model XD40 semi-automatic pistol that fired the Item 1-1 (Item 1) .40 caliber discharged cartridge casings.
6XVH6Q	Item 1-1 One (1) .40 S&W caliber discharged cartridge casing, headstamped "FEDERAL", known to have been fired by the suspect .40 S&W caliber Springfield Armory model XD40 pistol. Submitted as CTS item 1). Item 1-2 One (1) .40 S&W caliber discharged cartridge casing, headstamped "FEDERAL", known to have been fired by the suspect .40 S&W caliber Springfield Armory model XD40 pistol. Submitted as CTS item 1). Item 1-3 One (1) .40 S&W caliber discharged cartridge casing, headstamped "FEDERAL", known to have been fired by the suspect .40 S&W caliber Springfield Armory model XD40 pistol. Submitted as CTS item 1. Item 1-4 One (1) .40 S&W caliber discharged cartridge casing, headstamped "FEDERAL", recovered from the bank. Submitted as CTS item 2. Item 1-5 One (1) .40 S&W caliber discharged cartridge casing, headstamped "FEDERAL", recovered from the bank. Submitted as CTS item 3. Item 1-6 One (1) .40 S&W caliber discharged cartridge casing, headstamped "FEDERAL", recovered from the bank. Submitted as CTS item 4. Item 1-7 One (1) .40 S&W caliber discharged cartridge casing, headstamped "FEDERAL", recovered from the bank. Submitted as CTS item 5. As the result of physical and microscopic examination of the above mentioned evidence and test fired cartridge casings it is my opinion: a/ The discharged cartridge casing mentioned in item 1-4 was fired by the Springfield Armory model XD40 pistol that fired the cartridges mentioned in items 1-1, 1-2, and 1-3. b/ The discharged cartridge casings mentioned in item 1-5 and 1-7 were both fired by the same unknown weapon capable of chambering and firing .40 S&W caliber cartridges, not the suspect .40 S&W caliber Springfield Armory model XD40 pistol. c/ The discharged cartridge casing mentioned in item 1-6 was fired from an unknown weapon capable of chambering and firing .40 S&W caliber ammunition, it was not fired by the Springfield Armory model XD40 pistol that fired the cartridges mentioned in items 1-1, 1-2, and 1-3 and was not fired by the unknown weapon which fired the discharged casings mentioned in items 1-5 and 1-7.

TABLE 2

WebCode	Conclusions
6YBGPf	1. The expended cartridge cases, Exhibits 1 and 2, were fired in the same firearm. 2. The expended cartridge cases, Exhibits 3 and 5, were fired in the same firearm. 3. The expended cartridge case, Exhibit 4, could neither be identified nor eliminated as having been fired from the same firearm which fired either the expended cartridge cases, Exhibits 1 and 2, or the expended cartridge cases, Exhibits 3 and 5.
72JNRD	Sufficient corresponding impressed breechface markings were observed to determine Item 2 was discharged in the same firearm that marked Item 1. Items 3 and 5 were microscopically compared to Item 1A, and exhibited different impressed breechface markings to determine they were not discharged in the firearm that marked items 1A-1C. Items 3 and 5 exhibited sufficient corresponding impressed breechface markings to determine they were discharged from the same unknown firearm. Item 4 exhibits a significant different ejector marking and could not have been discharged in the same firearm that marked Items 1A-1C and the unknown firearm that generated Items 3 and 5.
749YH7	The Item F2 cartridge case was fired in the same firearm as the Item F1 cartridge cases. The Items F3 and F5 cartridge cases were fired in the same firearm. However, they were not fired in the same firearm as the Item F1 cartridge cases. The Item F4 cartridge case was not fired in the same firearm as any of the other cartridge cases.
77BWTY	Item 1 and Item 2 were fired in the same firearm. This conclusion was verified by Firearms Examiner [Name]. Item 3 and Item 5 were fired in the same firearm. This conclusion was verified by Firearms Examiner [Name]. Item 3 and Item 5 were not fired in the same firearm as Item 1 and Item 2. This conclusion was verified by Firearms Examiner [Name]. Item 3 and Item 5 could have been fired in a 40 S&W firearm of the following manufacture: Daewoo, FN/Browning, Heckler & Koch, Kahr Arms, Ruger, Smith & Wesson, Springfield Inc., Star, Taurus. Item 4 could not be identified or eliminated as having been fired in the same firearm as Item 1 and Item 2. This conclusion was verified by Firearms Examiner [Name]. Item 4 could not be identified or eliminated as having been fired in the same firearm as Item 3 and Item 5. This conclusion was verified by Firearms Examiner [Name]. In addition to the firearm that fired Item 1 and Item 2, or the firearm that fired Item 3 and Item 5, Item 4 could have been fired in a 40 S&W firearm of the following manufacture: Daewoo, FN/Browning, Heckler & Koch, Kahr Arms, Ruger, Smith & Wesson, Springfield Inc., Star, Taurus. Manufacturers lists are investigative tools and are not intended to be all-inclusive. Any suspect firearms should be submitted for comparison.
7FCFWL	Item #2 was fired in the same firearm as Item #1. Items #3 and #5 were fired in the same firearm. Items #3 and #5 were not fired in the same firearm that fired Items #1 and #2. Item #4 was not fired in the same firearms that fired Items #1, #2, #3, or #5.
7QL8U3	Items 1 and 2, the cartridge cases, were fired in the same firearm. Items 3 and 5, the cartridge cases, were fired in the same firearm. Comparisons between Item 4, the cartridge case, and Items 1 and 2, the cartridge cases, were inconclusive due to insufficient microscopic characteristics. Items 3 and 5, the cartridge cases, were not fired in the same firearm as Items 1, 2 or 4, the cartridge cases.
7TMVB7	Examinations showed Item 2 was discharged within the Springfield Armory semiautomatic pistol, model: XD40, caliber: .40 S&W. Examinations showed Items 3, 4 and 5 were not discharged within the Springfield Armory semiautomatic, model: XD40, caliber: .40 S&W, due to differences in class and individual characteristics. Examinations showed Items 3 and 5 were discharged within the same unknown firearm. Examinations showed Item 4 was not discharged within the same firearm as Items 3 and 5 due to differences in class and individual characteristics.

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7W6Z6V	A microscopic comparison examination of evidence cartridge cases Item 2 through item 5 against test fired cartridge cases item 1 from K1 Springfield Armory XD40 S&W pistol has revealed the following: Item 2 evidence cartridge case was fired with K1 Item 1 Springfield pistol. Item 3 and Item 5 evidence cartridge cases were fired with the same unknown firearm. They were not fired with K1 item 1 Springfield pistol. They bear different individual markings in the firing pin impression and different individual breechface marks than the Springfield pistol item 1 K1. Item 4 was not fired with K1 item 1 test fired cartridge cases from the Springfield 40 S&W pistol. Item 4 bears different individual markings in the firing pin impression, different individual breechface markings and a different ejector mark. Item 4 could not be identified or eliminated to Item 3 and item 5. Item 4 may also have been fired from a third firearm. Should any suspected firearms be recovered please submit them in reference to this CC#.
7YB4GD	2.1 The cartridge case mentioned in 3.1 marked 109097/10B was fired in the firearm that fired the tests mentioned in 3.2 marked 097 TC1-TC3. 2.2. The cartridge cases mentioned in 3.1 marked 109097/10 C, E was fired in the second firearm. 2.3 The cartridge case mentioned in 3.1 marked 109097/10 d was fired in the third firearm.
7ZY68E	The three fired cartridge cases from Item 1 and the fired cartridge case, Item 2, were identified as having been fired in the same firearm. The two fired cartridge cases, Items 3 and 5, were identified as having been fired in the same firearm. Due to a difference in individual characteristics, the two fired cartridge cases, Items 3 and 5, could not have been fired in the same firearm as the three fired cartridge cases from Item 1 and the fired cartridge case, Item 2. The fired cartridge case, Item 4, exhibits similar class characteristics as those displayed on fired cartridge cases from Items 1, 2, 3 and 5. However, due to a lack of matching individual detail, the fired cartridge case, Item 4, could neither be identified, nor eliminated as having been fired in the same firearm as Items 1 and 2 or the same firearm as Items 3 and 5. The results of these examinations are inconclusive.
83N2LE	The questioned cartridge case (Item 2) was fired from the same firearm as the known expended cartridge cases (Item 1). On the other hand, the questioned cartridge cases (Item 3, 4, 5) were not fired from the suspect's weapon (Item 1).
87QFDW	Item 2, a Federal caliber 40 Smith & Wesson cartridge case, was identified as having been fired in the firearm represented by the Item 1 Federal caliber 40 Smith & Wesson cartridge cases. Items 3 and 5, each a Federal caliber 40 Smith & Wesson cartridge case, were identified as having been fired in one (1) firearm and exhibit markings which may be suitable for identification with the firearm in which they were fired. Because of differences in individual characteristics, the Item 3 and 5 cartridge cases could not have been fired in the firearm represented by the Item 1 cartridge cases. Item 4, a Federal caliber 40 Smith & Wesson cartridge case, exhibits similar discernible class characteristics as those present on the Item 1 cartridge cases; however, because of the lack of sufficient suitable corresponding microscopic markings, it was not possible to identify or eliminate Item 4 as having been fired in the firearm represented by the Item 1 cartridge cases, Item 4 also exhibits similar discernible class characteristics as those present on the Item 3 and 5 cartridge cases; however, because of the lack of sufficient suitable corresponding microscopic markings, it was not possible to identify or eliminate Item 4 as having been fired in the same firearm as Items 3 and 5.
8AAQ7U	Microscopic examination and comparison reveals the cartridge case, Item 2, was fired in the same firearm as the test cartridge cases, Item 1. Microscopic examination and comparison reveals the cartridge cases, Items 3 and 5, were fired in a second firearm and were not fired in the same firearm as the cartridge cases, Items 1 and 2. Microscopic examination and comparison reveals the cartridge case, Item 4, was fired in a third firearm and was not fired in

TABLE 2

WebCode	Conclusions
	the same firearm as the cartridge cases, Items 1 and 2 or Items 3 and 5. Microscopic examination of the cartridge cases, Items 3, 4 and 5, did not reveal sufficient unique characteristics that could be used to develop a list of possible firearms in which they were fired. The cartridge cases, Items 3, 4 and 5, were suitable for comparison to a firearm should one be recovered during the course of the investigation.
8GQ2LF	At least three (3) .40 S&W caliber pistols were fired at the scene. The .40 S&W caliber cartridge case in item 2 was identified as having been fired from the Springfield Armory, model XD40, .40S&W caliber pistol in item 1. Because of differences in individual characteristics, the three (3) .40 S&W caliber cartridge cases in items 3, 4 and 5 could not have been fired from the Springfield Armory, model XD40, .40 S&W caliber pistol in item 1. The .40 S&W caliber cartridge cases in items 3 and 5 were identified as having been fired from the same firearm. The .40 S&W caliber cartridge case in item 4 was also excluded as having been fired from the pistol that fired cartridge cases in items 3 and 5. Any suspect .40 S&W caliber firearm should be submitted for comparison. The cartridge cases in items 3, 4 and 5 are being retained at the crime lab pending the submission of suspect firearms.
8JU2FL	The Item 1 and 2 cartridge cases were fired using one gun. The Item 3 and 5 cartridge cases were fired using a second gun. The Item 4 cartridge case has markings which suggest it may have been fired using a third gun, though this cannot be stated with certainty.
8LWV36	Items numbers 2, 3 and 5 were found to bear similar breechface and firing pin impressions as the three cartridge cases in item 1 and therefore, were all discharged from the suspect's weapon.
8MFLPV	The cartridge case in Item 2 was identified as having been fired in the same firearm that fired the Item 1 cartridge cases based on corresponding individual characteristics. The cartridge case in Item 3 was identified as having been fired in the same firearm that fired the Item 5 cartridge case based on corresponding individual characteristics. These cartridge cases, however could not be identified or eliminated as having been fired [sic] the same firearm as the Item 1 and Item 2 cartridge cases due to a lack of sufficient corresponding individual characteristics. The cartridge case in Item 4 could not be identified or eliminated as having been fired from the same firearm that fired the cartridge cases in Item 1, 2, 3 and 5 due to a lack of sufficient corresponding individual characteristics.
8NDFFU	1. It is the opinion of this examiner that the spent Federal 40 S&W brass cartridge case submitted as item #2 was fired from the same firearm that fired the three spent test fired cartridge cases submitted as item #1. 2. It is the opinion of this examiner that the three spent Federal 40 S&W brass cartridge cases submitted as items #3, #4, and #5 were not fired from the firearm that fired the three spent test fired cartridge cases submitted as item #1. 3. It is the opinion of this examiner that the two spent Federal 40 S&W brass cartridge cases submitted as items #3 and #5 were fired from the same firearm.
8TF2YC	Microscopic comparisons of the fired cartridge case, submitted as item #2, with test cartridge cases reported as fired in the Springfield Armory pistol, item #1, revealed matching individual breech face, firing pin impressions, and chamber marks. This finding confirms that the evidence cartridge case was fired in the Springfield Armory pistol. Microscopic comparisons of the two (2) fired cartridge cases, submitted as items #3 and #5, with test cartridge cases reported as fired in the Springfield Armory pistol, item #1, revealed dissimilar individual breechface characteristics. This finding confirms that the two (2) evidence cartridge cases were not fired in the Springfield Armory pistol. Further microscopic comparisons of these two (2) fired cartridge cases with each other revealed matching individual firing pin impressions. This finding confirms that the two evidence cartridge cases were fired in the same firearm. Microscopic comparisons of the fired cartridge case, submitted as item #4, with test cartridge

TABLE 2

WebCode	Conclusions
8V6GED	<p>cases reported as fired in the Springfield Armory pistol, item #1, revealed some matching individual breechface characteristics and firing pin impressions. These findings indicate that the evidence cartridge case could have been fired in the Springfield Armory pistol; however, there were insufficient matching individual characteristics for the purposes of a positive identification.</p> <p>The cartridge case submitted in Item 2 exhibits the same class characteristics as the confiscated Springfield Armory pistol. It was further microscopically examined and compared with the test fired cartridge cases (Item 1). Based on the correspondence of patterns of individual characteristics, it was identified as having been fired in the Springfield Armory pistol that produced the test fired cartridge cases (Item 1). The cartridge cases submitted as Items 3 and 5 share the same class characteristics. Their exhibited class characteristics and patterns of individual characteristics differ from those of Items 1 and 2, therefore they were eliminated as having been fired from the Springfield Armory pistol. They were further microscopically examined and compared. Based on the correspondence of patterns of individual characteristics, Items 3 and 5 were identified as having been fired in the same firearm. They exhibit individual characteristics which may be of value for comparison with suspect firearms. Based on differences in class characteristics and in patterns of individual characteristics, Item 4 was eliminated as having been fired in the confiscated Springfield Armory pistol or the firearm that fired Items 3 and 5. It exhibits individual characteristics which may be of value for comparison with suspect firearms. Any firearm that becomes suspect in this investigation should be submitted for laboratory examination.</p>
8Z4N8N	<p>Microscopic examination and comparison reveals the cartridge cases, Items 1 and 2, were fired in the same firearm. Microscopic examination and comparison reveals the cartridge cases, Items 3 and 5, were fired in the same firearm. The cartridge cases, Items 3 and 5, were not fired in the same firearm as the cartridge cases, Items 1, 2, or 4. Items 3 and 5 did not reveal any unique characteristics that could be used to develop a list of possible firearms in which they were fired. The cartridge cases, Items 3 and 5, are suitable for comparison to a firearm should one be recovered during the investigation. Microscopic examination and comparison reveals the cartridge case, Item 4, was not fired in the same firearm as the cartridge cases, Items 1 and 2. The cartridge case, Item 4, did not reveal any unique characteristics that could be used to develop a list of possible firearms in which it was fired, however it is suitable for comparison to a firearm should one be recovered during the investigation.</p>
92UBWW	<p>The cartridge cases in Items 2, 3, 4, and 5 were microscopically examined in conjunction with one another, and with the cartridge cases in Item 1. Based on these comparative examinations, it was determined that: A. The cartridge cases in Items 1 and 2 had been fired in the same firearm. B. The cartridge cases in Items 3 and 5 had both been fired in the same firearm. However, no similar individual characteristics were found to link the cartridge cases in Items 3 and 5 to having been fired in the same firearm as the cartridge cases in Item 1. C. No individual characteristics were found to link the cartridge case in Item 4 as having been fired in the same firearm as the cartridge cases in Items 1 and 2 or Items 3 and 5.</p>
93DGTV	<p>Item 2 was identified as having been fired from the same firearm (Springfield XD40) as Item 1. Items 3 and 5 were identified as having been fired in the same firearm. Items 3 and 5 both exhibit similar class characteristics to Item 1, 2 and 4. However, insufficient individual characteristics were present to identify or eliminate these cartridge cases as having been fired from the same firearm as Item 1, 2, or 4. Item 4 exhibits similar class characteristics to Items 1, 2, 3, and 5. However, insufficient individual characteristics were present to identify or eliminate this cartridge case as having been fired from the same firearm as Item 1, 2, 3, or 5.</p>

TABLE 2

WebCode	Conclusions
96T9G3	The Item 2 cartridge case was fired in the pistol that generated the Item 1 test fired cartridge cases. The Item 3 and Item 5 cartridge cases were fired in the same firearm but were not fired in the pistol that generated the Item 1 test fired cartridge cases. The Item 4 cartridge case was not fired in the pistol that generated the Item 1 test fired cartridge cases nor the pistol that generated the Item 3 and 5 cartridge cases.
96V8NC	The cartridge case in item 2 was identified as having been fired in the same firearm as the cartridge case in item 1. The cartridge cases in items 3, 4 and 5 could not be identified as having been fired in the same firearm as the cartridge cases in items 1 and 2. Microscopic examination revealed that the cartridge cases in items 3, 4 and 5 did not exhibit sufficient agreement of individual characteristics for identification to the cartridge cases in items 1 and 2. Similar class characteristics indicate the cartridge cases in items 3, 4 and 5 could have been fired in the same firearm as the cartridge cases in items 1 and 2, or in any other firearm having similar general rifling characteristics.
9DMDB4	The exhibit fired cartridge case item 2. was identified to the test fired cartridge cases item 1 fired in the exhibit 40 S&W Springfield Armory XD40 handgun. The exhibit fired cartridge cases items 3, 4 and 5 have been eliminated from the test fired cartridge cases item 1 fired in the exhibit 40 S&W Springfield Armory XD40 handgun. The exhibit fired cartridge cases item 3 and item 5 were identified to be fired in the same firearm that has not been submitted for examination.
9EGY4V	Item 2, the cartridge case, was fired in Item 1, the Springfield Armory Pistol. Items 3 and 5, the cartridge cases, were fired in the same firearm. Items 3 and 5, the cartridge cases, were not fired in Item 1, the Springfield Armory Pistol. Items 3 and 5, the cartridge cases, were not fired in the same firearm as Item 4, the cartridge case. Comparisons between Item 4, the cartridge case, and cartridge cases fired in Item 1, the Springfield Armory pistol, were inconclusive due to insufficient microscopic characteristics. The results of NIBIN entries and searches will be subject of a separate report.
9MCMJT	A microscopic comparison examination of evidence cartridge cases Item 2 through Item 5 (.40 S&W) against each other and against test fired cartridge cases Item 1 (.40 S&W) have revealed the following results: Item 2 evidence cartridge case was fired with Item 1 test fired cartridge cases from the known recovered firearm (Springfield Armory Model: XD40, .40 S&W). Item 3 and Item 5 evidence cartridge cases were fired with the same unknown firearm (Firearm #2). They were not fired with Item 1 test fired cartridge cases from the known recovered firearm (Firearm #1) due to differences in breech face and firing pin impressions. Item 4 evidence cartridge case was not fired with Item 1 test fired cartridge cases from the known recovered firearm #1 (Springfield Armory Model: XD40, .40 S&W) due to differences in individual breech face and firing pin impressions and different ejector marks are present. Item 4 evidence cartridge case cannot be identified or eliminated as having been fired with the same firearm as Item 3 and Item 5 due to an insufficient agreement of microscopic markings between Item 4 against Item 3 and Item 5. Should any additional suspected firearm(s) be recovered, submit, and refer to the above CC#.
9MFNMK	The questioned fired cartridge case (Item 2) was fired by the same firearm that fired the three test fired cartridge cases (Item 1). The three fired cartridge cases (Item 3, Item 4 and Item 5) were not fired by the firearm that fired the three test fired cartridge cases (Item 1). The two fired cartridge cases (Item 3 and Item 5) were fired by a single (second) firearm. The fired cartridge case (Item 4) was fired by a third (different) firearm.
9Q942N	Item #2 was fired in Item #1. Items #3 & #5 were fired in the same firearm. Items #3 & #5 could not be identified or eliminated to Item #2, or as having been fired in Item #1. Item #4 could not be identified or eliminated to Item #2, or as having been fired in Item #1, or

TABLE 2

WebCode	Conclusions
	as having been fired in the same firearm as Items #3 & #5.
9T49QZ	Using a Forensic Comparison Microscope I compared the known fired cartridge cases (Item 1) to the questioned fired cartridge cases contained within Items 2, 3, 4 and 5. My examinations showed that only the fired cartridge cases contained within Item 2 and Item 5 had been fired in the same firearm that fired the fired cartridge cases contained within Item 1. My examinations also showed that the fired cartridge case contained within Item 3 had been fired in a different firearm to that which fired the fired cartridge case contained within Item 4.
9WKVN9	The 40 S&W caliber cartridge casing, Item 2, was identified as having been fired in the firearm used to generate the Item 1 test fires based upon sufficient agreement of individual characteristics. The 40 S&W caliber cartridge casings, Item 3 and Item 5 were identified as having been fired in the same firearm, but were neither identified nor excluded as having been fired in the firearm used to generate the Item 1 test fires due to insufficient individual characteristics. The 40 S&W caliber cartridge casing, Item 4, could be neither identified nor excluded to any other items submitted for examination due to insufficient individual characteristics.
9WYF3C	Microscopic comparisons of the fired cartridge case, submitted as item #2, with test cartridge cases reported as fired in the Springfield Armory pistol, item #1, revealed matching individual breech face and firing pin impressions. This finding confirms that the evidence cartridge case was fired in the Springfield Armory pistol. Microscopic comparisons of the two (2) fired cartridge cases, submitted as items #3 and #5, with each other revealed matching individual breech face and firing pin impressions. This finding confirms that the two evidence cartridge cases were fired in the same firearm. Further microscopic comparisons of these two (2) fired cartridge cases with test cartridge cases reported as fired in the Springfield Armory pistol, item #1, revealed dissimilar individual and sub-class characteristics. This finding confirms that the evidence cartridge cases were not fired in the Springfield Armory pistol. Microscopic comparisons of the fired cartridge case, submitted as item #4, with test cartridge cases reported as fired in the Springfield Armory pistol, item #1, revealed corresponding class characteristics. This finding indicates that the evidence cartridge case could have been fired in the Springfield Armory pistol; however, there were insufficient matching individual characteristics for the purposes of positive identification. The fired cartridge case, submitted as item #4, was microscopically compared to the two (2) fired cartridge cases submitted as items #3 and #5. No conclusive determination could be made as to whether or not item #4 was fired from the same firearm that fired items #3 and #5.
9XUZ2W	Microscopic examination and comparison of the fired Federal .40 S&W cartridge case, Item 2, reveals that it was fired in the same firearm as the three fired Federal .40 S&W cartridge cases, Item 1. Microscopic examination and comparison of the fired Federal .40 S&W cartridge cases, Items 3 and 5, reveals that they were fired in the same firearm. They were not, however, fired in the same firearm as the three fired Federal .40 S&W cartridge cases, Item 1. Microscopic examination and comparison of the fired Federal .40 S&W cartridge case, Item 4, fails to reveal if it was, or was not, fired in the same firearm as the three fired Federal .40 S&W cartridge cases, Item 1.
9YGXX2	The Item #2 expended cartridge case was fired in the same firearm as the Item #1 test fires. The Item #3 and 5 expended cartridge cases were both fired in a second firearm. The Item #4 cartridge case was fired in a third firearm. At least three separate 40 S&W caliber firearms were fired in this case.
A94JU8	Item 2 is determined to have been fired in the same firearm which fired Item 1. Items 3, 4, & 5 are excluded from having been fired in the same firearm which fired Item 1.

TABLE 2

WebCode	Conclusions
ABXL4M	Items A1-2, A1-3, A1-4, and A1-5: The fired cartridge cases are consistent in class characteristics with the submitted test fires A1-1. Item A1-2 was compared to item A1-1. The fired evidence in question was fired with the suspect firearm. The significant agreement of individual characteristics is sufficient for an identification. Items A1-3, A1-5 and A1-4 were compared to item A1-1. The fired evidence in question was not fired with the suspect firearm. The significant disagreement of individual characteristics is sufficient for an elimination. Item A1-3 was compared to item A1-5. The fired evidence in question was fired from the same firearm not received. The significant agreement between the two exhibits is sufficient for a finding of common origin other than the suspect firearm.
AGLBH6	Item 2 was fired in the same firearm that is represented as having fired the cartridge cases in Item 1. Items 3 and 5 were fired in the same firearm, but not in the same firearm that is represented as having fired the cartridge cases in Item 1. Item 4 was not fired in the same firearm that is represented as having fired the cartridge cases in Item 1, nor was it fired in the same firearm that fired Items 3 and 5.
AHANK3	1. The expended cartridge case, Item 2, was fired in the XD40 handgun that fired the test cartridge cases, Item 1. 2. The expended cartridge cases, Items 3 and 5, were fired in a single firearm. Class characteristics were found to be in agreement between the test cartridge cases, Item 1, and the expended cartridge cases, Items 3 and 5; however, no identifiable pattern of individual characteristics was observed. The expended cartridge cases, Items 3 and 5, were neither identified nor eliminated as having been fired in the XD40 handgun that fired the test cartridge cases, Item 1. 3. The expended cartridge case, Item 4, was not fired in the XD40 handgun that fired the test cartridge cases, Item 1, or the handgun that fired the cartridge cases, Items 3 and 5.
AMQNGT	Item 1 - a test-fired cartridge case from Item 1 was microscopically compared to the fired cartridge case in Item 2. There was sufficient agreement in class and individual characteristics to conclude that Item 2 was fired in the same firearm that fired the cartridge cases in Item 1. A test-fired cartridge case from Item 1 was microscopically compared to the fired cartridge cases in Items 4 and 5. There was significant disagreement in individual characteristics to conclude that Items 4 and 5 were not fired in the same firearm that fired the cartridge cases in Item 1. Items 3 and 5 - These two fired cartridge cases were microscopically compared to each other. There was sufficient agreement in class and individual characteristics to conclude that Items 3 and 5 were fired in the same firearm. Since Item 5 had been eliminated as having been fired in the same firearm that fired the cases in Item 1, Item 3 can also be eliminated as being fired in the same firearm that fired the cases in Item 1. Item 5 was microscopically compared to Item 4. There was significant disagreement in individual characteristics to conclude that Item 4 was not fired in the same firearm that fired Items 5 and 3.
AN287C	Item #2 discharged cartridge case was fired in/from the firearm that test-fired the item #1 cartridge cases. Items 3 and 5 discharged cartridge cases were fired in/from a second firearm. Item #4 discharged cartridge case was fired in/from a third firearm.
ARG6GE	As a result of physical and microscopic examination of the test specimens against the submitted evidence it is my opinion: A/ The .40 S&W caliber discharged cartridge casing mentioned in item 1-4 (CTS item 2) was fired by the Springfield Armory model XD40 pistol that fired the tests in items 1-1, 1-2, and 1-3 (CTS item 1). B/ The .40 S&W caliber discharged cartridge casing mentioned in item 1-5 (CTS item 3) and 1-7 (CTS item 5) were both fired by the same unknown weapon, but not the Springfield Armory, model XD 40 that was used for the test firings, items 1-1, 1-2, and 1-3 (CTS item 1). C/ The .40 S&W caliber discharged cartridge casing mentioned in item 1-6 (CTS item 4) was fired by an unknown

TABLE 2

WebCode	Conclusions
	weapon capable of chambering .40 S&W caliber ammunition, but not the Springfield Armory XD 40 pistol used in the test firings, items 1-1, 1-2, and 1-3 (CTS item 1).
ARMRFM	Microscopic examination and comparison reveals the cartridge cases, Items 1A and 1B, were fired in the same firearm. Microscopic examination and comparison reveals the cartridge cases, Items 1C and 1E, were fired in the same firearm but not the same firearm as the test cartridge cases, Items 1A. Microscopic examination of the cartridge cases, Items 1C and 1E, did not reveal any unique characteristics that could be used to develop a list of possible firearms in which they were fired; however, they were fired in a .40 S&W pistol. The cartridge cases, Items 1C and 1E, are suitable for comparison to a firearm should one be recovered during the investigation. Microscopic examination and comparison reveals the cartridge cases, Item 1D to Item 1A, were not fired in the same firearm. Microscopic examination and comparison reveals the cartridge cases, Item 1D to Item 1C, were not fired in the same firearm. Microscopic examination of the cartridge case, Item 1D, did not reveal any unique characteristics that could be used to develop a list of possible firearms in which it was fired; however, it was fired in a .40 S&W pistol. The cartridge case, Item 1D, is suitable for comparison to a firearm should one be recovered during the investigation.
AU6ZEL	Item #2 is identified as having been fired in the suspect weapon. Items #3 and #5 are identified to each other as having been fired in the same firearm. Items #3, #4 and #5 all exhibit similar class characteristics as those produced by the suspect weapon although there are not sufficient individual characteristics to positively identify or eliminate them as having been fired by the suspect weapon.
AXTPKK	The fired cartridge cases in items 2, 3, 4, and 5 were microscopically compared to each other and to test fires from the suspect's firearm (item 1). Item 2 was determined to have been fired in the same firearm as the test fires in Item 1. Items 3 and 5 were determined to have been fired in a second firearm. Item 4 was determined to have been fired in a third firearm.
AYHZBD	Item 2 is identified as having been fired in the same firearm as the known tests shots (Items 1A, 1B, 1C) reportedly from a .40 S&W caliber, Springfield Armory, XD40 model, semiautomatic pistol. Items 3, 4 and 5 were not identified or eliminated as having been fired in the same firearm as the known test shots (Items 1A, 1B, 1C) reportedly from a .40 S&W caliber, Springfield Armory, XD40 model, semiautomatic pistol. Items 3 and 5 were identified as having been fired in the same firearm. Item 4 was not identified or eliminated as having been fired in the same firearm as Items 3 and 5.
AZDAUV	The suspect's gun fired one of the cartridge cases (Item 2), did not fire a second of the cartridge cases (Item 4), and may or may not have fired the remaining two cartridge cases (Items 3 and 5).
B6Z8CC	As a result of physical and microscopic examination of this evidence, it is my opinion that: a. The discharged cartridge casing submitted as Item 1-4 (CTS Item 2) was fired from the same "suspect weapon" as the discharged cartridge casings submitted as Items 1-1 thru 1-3 (CTS Item 1). b. The discharged cartridge casings submitted as Items 1-5 and 1-7 (CTS Items 3 and 5) were both fired from the same unknown weapon capable of chambering and firing .40S&W caliber ammunition. This unknown weapon is not the same weapon which produced the cartridge casings submitted as Items 1-1 thru 1-3 (CTS Item 1) {"suspect weapon"}. c. The discharged cartridge casing submitted as Item 1-6 (CTS Item 4) was fired from an unknown weapon capable of chambering and firing .40S&W caliber ammunition. This unknown weapon is not the same weapon which produced the cartridge casings submitted as Items 1-1 thru 1-3 (CTS Item 1) {"suspect weapon"}, nor is it the same weapon which produced the cartridge casings submitted as Items 1-5 and 1-7. (CTS Items 3 and 5).

TABLE 2

WebCode	Conclusions
B72CE7	Item 2 was fired in the same firearm used to make Item 1 tests. Items 3 & 5 were fired in a second firearm. Item 4 was fired in a third firearm.
B7V9CE	The submitted fired 40S&W cartridge cases from Items 2, 3, 4 & 5 and the test fired 40S&W cartridge cases from Item 1 share similar class characteristics. They were further microscopically examined and compared. Based upon observed correspondence of matching patterns of individual characteristics, the cartridge cases from Items 1a, 1b, 1c and 2 were identified as having been fired in the same firearm. Based upon observed correspondence of matching patterns of individual characteristics, the cartridge cases from Items 3 and 5 were identified as having been fired in the same firearm. The microscopic comparisons of Item 4 with Items 1, 2, 3 or 5 were not conclusive. The microscopic comparisons of Items 1 and 2 with Items 3 or 5 were not conclusive. The class and/or individual characteristics observed were not sufficient to identify or eliminate these Items from one another as indicated.
BALRXR	One of the cartridge cases from the bank (Item 2) was determined to have been fired in the suspect's weapon (Item 1). Two cartridge cases from the bank (Items 3 and 5) were determined to have been fired in a second weapon. The remaining cartridge case (Item 4) was determined to have been fired in a third weapon.
BAY3D6	The test fired cartridge cases (Item 1) were microscopically compared to the evidence cartridge cases (Items 2-5) with the following results: One cartridge case (Item 2) was identified as having been fired by the same firearm as the test cartridge cases. Two cartridge cases (Items 3 and 5) were identified as having been fired by a second firearm (not the same firearm as the test cartridge cases). The remaining cartridge case (Item 4) is marked with overall characteristics similar to the above listed cartridge cases but did not exhibit any significant matching of the individual (microscopic) characteristics as the other cartridge cases. Therefore, it could not be identified or eliminated as having been fired by either of these same firearms and may represent a third firearm.
BBCPW6	The cartridge cases (Exhibits 1 through 5) are brass, .40 S&W caliber with "Federal 40 S&W" headstamps. Casts of the cartridge cases were prepared to facilitate examinations. The casts of the cartridge cases (Exhibits 1 through 5) were compared and the following conclusions were reached. Based on similar class characteristics and sufficient correspondence of individual, firearm produced markings, the three cartridge cases (Exhibit 1) and the one cartridge case (Exhibit 2) were fired in the same firearm. Based on significant differences in individual firearm produced markings, the cartridge cases (Exhibits 3, 4 and 5) were not fired in the firearm that fired the three cartridge cases (Exhibit 1). Based on similar class characteristics and sufficient correspondence of individual, firearm produced markings, the cartridge case (Exhibit 3) and the cartridge case (Exhibit 5) were fired in a single firearm, different than the firearm that fired Exhibits 1 and 2. Based on significant differences in individual firearm produced markings, the cartridge case (Exhibit 4) was not fired in the same firearm that fired Items 3 and 5, and not in the same firearm that fired Exhibits 1 and 2. There[is], the cartridge case (Exhibit 4) was fired in a third firearm.
BDK7JV	Items 1 and 2 were identified as having been fired by the same firearm. Items 3 and 5 were identified as having been fired by the same firearm, a different firearm than that which fired items 1 and 2. Item 4 could neither be identified nor excluded as having been fired by the firearm that fired items 1 and 2 or the firearm that fired items 3 and 5. All such comparisons were inconclusive.
BQ4AR8	Item 2 was found upon microscopic comparison to have been discharged in the same firearm that had discharged Item 1. Items 3 and 5 were found upon microscopic comparison to have been discharged in the same firearm; albeit, one that is different from the firearm that discharged Items 1 and 2. Item 4 was not discharged in either of the firearms that discharged

TABLE 2

WebCode	Conclusions
	Items 1, 2, 3, and 5 based on differences of class characteristics.
BQKGL3	Item 2 was identified as having been fired in the same firearm that is reported to have fired the three test fires listed as Item 1. Items 3 and 5 were identified as having been fired in the same unknown firearm. Item 4 was eliminated as having been fired in the same unknown firearm. Item 4 was eliminated as having been fired in the same firearms that fired Items 2, 3 and 5. Test fires (Item 1) as well as Items 3 and 4 will be imaged into the Integrated Ballistics identification system, any identification made from this entry and search will be supplemented.
BWCBP2	I conducted a comparative macroscopic examination between the three .40S&W calibre Federal fired cartridge cases (Item 1) and the four .40S&W calibre Federal fired cartridge cases (Items 2, 3, 4 & 5). This revealed that three different firearms had been used to discharge the five Items: Item 2 had been discharged in the same firearm as Item 1; Items 3 & 5 had been discharged in a second firearm; this was separate to that which had discharged Items 1 & 2, or 4. Item 4 had been discharged in a third firearm; this was separate to that which had discharged Items 1 & 2 and 3 & 5.
BXMMEC	Item 2 was identified as having been fired in the same firearm as the three cartridge cases in Item 1. Items 3 and 5 were identified as having been fired in the same firearm. Items 3 and 5 could neither be identified nor eliminated as having been fired in the same firearm as the three cartridge cases in Item 1 and/or the same firearm as Item 4 due to insufficient individual microscopic marks of comparative value. Item 4 could neither be identified nor eliminated as having been fired in the same firearm as the three cartridge cases in Item 1 due to insufficient individual microscopic marks of comparative value.
BZWHCX	The Item 2 fired cartridge case was fired in the Item 1 pistol. The Item 3 and Item 5 fired cartridge cases were fired in the same pistol however it is inconclusive as to whether Item 3 or Item 5 were fired in Item 1. The Item 4 fired cartridge case was compared to Items 1, 2, 3, and 5. It is inconclusive as to whether Item 4 was fired in the same firearm as Item 1 or the same firearm as Items 3 or 5.
C2CQKV	Items 2, 3, 4, and 5 were microscopically examined and compared to Item 1. Item 2 was identified as being fired from the same firearm as Item 1, the .40 S&W Springfield Armory XD40 handgun seized from the suspect. Items 3 and 5 were identified as being fired from the same firearm, but a different firearm from that which produced the test fires in Item 1. Item 4 was fired in a different firearm than Items 1 & 2 or 3 & 5.
C498TC	The Item #2 cartridge case was discharged in the same firearm that produced the Item #1 test fires (Springfield Armory, model XD40, serial number unknown). The Item #3 and Item #5 cartridge cases were discharged in a second firearm. The Item #4 cartridge case was discharged in a third firearm.
C4QURU	Items 1 and 2 were fired in the suspect's weapon. Items 3 and 5 were fired in the same weapon but not the suspect's weapon. Item 4 was fired in a different weapon than the suspect's weapon and the one that fired Items 3 and 5.
C89BMK	1. Microscopic comparison of Exhibit 1 (Cartridge cases) and 2 (Cartridge case) disclosed that they were fired in the same firearm. 2. Microscopic comparison of Exhibits 3, 4, and 5 (Cartridge cases) disclosed that they were not fired in the same firearm as Exhibit 1.
C9E6GD	Following detailed microscopic comparisons I can confirm that the pistol recovered from the suspect was used to discharge the cartridge case, item 4. Items 3 and 5 were discharged from a second (unrecovered) weapon and a third (unrecovered) weapon discharged item 2.
CCXVNE	Item #2 was fired in/from the same [sic] as Item #1. Items #3 & 5 were fired in/from the

TABLE 2

WebCode	Conclusions
	same firearm but not the same as Item #1 & 2. Item #4 could not be confirmed or eliminated as having been fired in/from the same firearm as Items #1, 2, 3, 5.
CH4TE2	The expended cartridge case, Exhibit 2, was fired in the firearm which fired the test cartridge cases of Exhibit 1. The cartridge cases of Exhibit 3 and 5 were fired in a single firearm. The cartridge case, Exhibit 4 had a different pattern of marks from any of the other cartridge cases. Remarks: 1. The patterns of individual characteristics found on the cartridge cases indicated the involvement of three firearms.
CJZRNE	Items 2, 3, 4, and 5 have been compared microscopically with Item 1 (Tests) and each other. Item 2 was fired in the same firearm as Item 1 (Tests).
CP7F88	Microscopic examination and comparison of discharged cartridge case (Item #2) with tests (T1, T2, T3) revealed they were fired by a common source. Microscopic examination and comparison of discharged cartridge cases Item #3 and Item #5, with tests revealed they were fired by a different common source.
CQK6BK	Item #1B (casing) was fired in the same firearm as item #1A (test fired casings). Item #1C and #1E (casings) were fired by the same firearm. They were not fired by the same firearm that fired item #1A (test fired casings). Item #1D (casing) could not be identified or eliminated as having been fired by #1A (tested fired casing) or the firearm that fired #1C and #1E (casings).
CU6PKV	Items #1 and #2 were fired in the same firearm. Items #3 and #5 were fired in the same firearm. They were not fired in the same firearms that fired Items #1, #2 or #4. Item #4 was not fired in the same firearms that fired Items #1, #2, #3 or #5.
CXZTF	The cartridge cases Items 1 through 5 were compared microscopically with each other. Three different firearms were involved. One firearm fired the cartridge cases Items 1 and 2. A second firearm fired the cartridge cases Items 3 and 5. A third firearm fired the cartridge case Item 4.
CZ7AHJ	The Item 2 cartridge case was identified as having been fired in the same firearm as the Item 1 cartridge cases. The Item 3 and Item 5 cartridge cases were identified as having been fired in the same firearm. Because of differences in individual characteristics, the Item 3 and Item 5 cartridge cases could not have been fired in the same firearm as the Item 1 cartridge cases. The Item 4 cartridge case exhibits the same discernible class characteristics as the Item 1, Item 3, and Item 5 cartridge cases; however, because of the lack of sufficient suitable corresponding microscopic markings, it was not possible to identify the Item 4 cartridge case as having been fired in the same firearm as the Item 1, Item 3, or Item 5 cartridge cases.
CZG6Q6	Item #2 was identified as having been fired in the same firearm as Tests #1 (a-c). Items #3 and #5, are identified as having been fired in the same firearm. Item 4 exhibits similar class characteristics as those produce by the firearm. However due to the lack of sufficient corresponding individual characteristics, it is not possible to identify or eliminate this fired cartridge case as having been fired in the same firearm as item #1.
CZPBLT	Item 2, the cartridge case, was fired in the same firearm as Item 1, the cartridge cases identified to be discharged from suspects[sic] weapon. Items 3 and 5, the cartridge cases, were fired in the same firearm. Items 3 and 5, the cartridge cases, were not fired in the same firearm as Item 1, the cartridge cases identified to be discharged from suspects[sic] weapon or Item 4, the cartridge case. Comparisons between Item 4, the cartridge case and Item 1, the cartridge cases identified to be discharged from suspects[sic] weapon, were inconclusive due to insufficient microscopic detail.

TABLE 2

WebCode	Conclusions
D3PJXB	The cartridge cases from Item 2, Item 3, and Item 5 were fired in the same firearm as the cases from Item 1. The case from Item 4 does not appear to have been fired in the same firearm as Item 1.
DBLBJC	Exhibit #2 was fired in Exhibit #1. Exhibit #3 and Exhibit #5 were fired in the same firearm. Exhibit #3 and Exhibit #5 were not fired in Exhibit #1. Exhibit #4 could not be identified or eliminated as having been fired in Exhibit #1.
DC3CLD	The cartridge case from the scene, item 2, was fired in the 40SW caliber Springfield Armory XD40 pistol. Items 3 and 5 were fired from the same firearm; however, these cartridge cases were not fired by the 40b S&W caliber Springfield Armory XD40 firearm that fired Item 1. The other cartridge case from the scene, item 4 was eliminated as having been fired from the suspect's weapon.
DGBZV9	Comparative examinations of Item 2 (one fired 40 S&W caliber cartridge case) against a cartridge case from Item 1 (three fired 40 S&W caliber cartridge cases represented as having been test fired in a Springfield Armory Model XD40 40 S&W caliber pistol) showed the presence of matching features. This means that Item 2 was fired in the same firearm as Item 1. Comparative examinations of Items 3 and 5 (two fired 40 S&W caliber cartridge cases) showed the presence of matching features indicating that they were fired in the same firearm. Comparative examinations of Item 4 (one fired 40 S&W caliber cartridge case) against Items 1 and 2 were inconclusive. Comparative examinations of Item 4 against Items 3 and 5 were inconclusive; however, there are indications another firearm may have been used. Comparative examinations of Items 3 and 5 against a cartridge case from Item 1 showed the presence of different features. This means that Items 3 and 5 were not fired in the same firearm as Item 1.
DGNN32	The cartridge case, Item 2, was fired in the same firearm as represented by the tests, Item 1. The cartridge cases, Items 3 and 5, were fired in the same firearm as each other. The cartridge case, Item 4, was fired in a different firearm than Items 1, 2, 3, and 5.
DGRFA6	Item 2 was fired in the same firearm as Item 1. Item 3 and Item 5 were fired in a second firearm. Item 4 was fired in a third firearm.
DH4X4F	Items 1 through 5 are .40 S&W caliber "Federal" fired cartridge cases. Items 1 and 2 were identified as having been fired from the same firearm. Items 3 and 5 were identified as having been fired from the same firearm. Items 1 and 2, Items 3 and 5, and Item 4 could not be identified or eliminated as having been fired from the same firearm.
DNVEZK	The submitted cartridge cases (Items 2, 3, 4, and 5) were examined and compared to each other and to the test-fired cartridge cases from the Springfield Armory XD40 pistol (Item 1). It was concluded from the examination that one cartridge case (Item 2) was fired by the Springfield Armory pistol. The remaining three cartridge cases (Items 3, 4, and 5) could be eliminated from being fired by the Springfield Armory pistol. Two of the cartridge cases (Items 3 and 5) were fired by the same firearm. The remaining cartridge case (Item 4) was fired by another firearm.
DYDWRR	Items 1 and 2 were fired in the same firearm. Items 3 and 5 were fired in the same firearm. Comparisons of Items 3, 4 and 5 with Items 1 and 2 were inconclusive due to insufficient microscopic characteristics. Comparisons of Items 3 and 5 with Item 4 were inconclusive due to insufficient microscopic characteristics.
E6947C	The cartridge cases Exhibit 1 (A, B & C) were compared microscopically with the cartridge case Exhibit 2. The cartridge case Exhibit 2 was fired in the same firearm as Exhibit 1 (known). The cartridge cases Exhibit 3 and 5 were compared microscopically with each

TABLE 2

WebCode	Conclusions
	other. They were fired in the same firearm. The cartridge case Exhibit 4 was fired in a different firearm than the cartridge cases listed above.
E72E6E	1) Cartridge cases describes[sic] in the Item 3 and Item 5 were fired by the same firearm; they were not fired by the suspect's firearm. 2) Cartridge Case describe[sic] in the Item 4 was fired by a firearm; it was not fired by the same firearm that fired the cartridge cases describes[sic] in the Item 3 and Item 5.
E76TUK	The cartridge cases were microscopically examined and compared. It was determined that the cartridge case, item 2, and the testfired cartridge cases, item 1, from the Springfield Armory XD40 handgun (Firearm #1) were fired from the same firearm. It was also determined that two cartridge cases, items 3 and 5, were fired from the same firearm (Firearm #2), but not from Firearm #1. In addition, it was determined that the cartridge case, item 4, was not fired from either Firearm #1 or from Firearm #2.
EBFGDB	Evidence items 2, 3, 4 and 5 were microscopically compared to test fired cartridge cases from evidence item 1 with the following results. The expended cartridge case contained in item 2 was positively fired in the same firearm as the test fired cartridge cases found in item 1. The expended cartridge cases contained in items 3, 4 and 5 were positively not fired in the same firearm as the test fired cartridge cases found in item 1. Evidence Items 3 and 5 were microscopically compared to each other with the following results. The expended cartridge cases contained in items 3 and 5 were all positively fired in the same firearm. Evidence Items 3 and 5 were microscopically compared to Evidence Item 4 with the following results. The expended cartridge cases contained in items 3 and 5 were positively not fired in the same firearm that fired item 4.
EGNPYL	The submitted fired 40 S&W caliber cartridge case, Item 2, was fired in the same firearm as the submitted test fired 40 S&W caliber cartridge cases, Item 1. The submitted fired 40 S&W caliber cartridge cases, Items 3, 4, and 5, cannot be identified or eliminated as having been fired in the same firearm as the submitted test fired 40 S&W caliber cartridge cases, Item 1, or the submitted fired 40 S&W caliber cartridge case, Item 2. The submitted fired 40 S&W caliber cartridge cases, Items 3 and 5, were fired in the same firearm. The submitted fired 40 S&W caliber cartridge case, Item 4, cannot be identified or eliminated as having been fired in the same firearm as the submitted fired 40 S&W caliber cartridge cases, Items 3 and 5.
ET3QER	The Item 1 cartridge cases and Item 2 cartridge case were identified as having been fired in the same firearm. The Item 3 and Item 5 cartridge cases were identified as having been fired in the same firearm, although it could not be determined if it was the same firearm that fired the Item 1 and Item 2 cartridge cases. The Item 4 cartridge case bore insufficient corresponding toolmarks of value to be associated with any of the other submitted items.
EUDNPN	The Item 2 Federal caliber 40 S&W cartridge case was identified as having been fired in the firearm represented by the Item 1 Federal caliber 40 S&W cartridge cases. The Items 3 and 5 Federal caliber 40 S&W cartridge cases were identified as having been fired in the same firearm. Because of differences in individual characteristics, Items 3 and 5 could not have been fired in the firearm represented by the Items 1 and 2 cartridge cases. Because of differences in individual characteristics, the Item 4 Federal caliber 40 S&W cartridge case could not have been fired in either of the firearms represented by Items 1 and 2 or Items 3 and 5.
EXDVBL	Item 2 was fired in Item 1. Items 3 and 5 were fired in a second .40 S&W pistol. Possible suspect weapons are unknown. Item 4 was fired in a third .40 S&W pistol, possibly a Sig Sauer.

TABLE 2

WebCode	Conclusions
F8KCEH	The questioned 40 S&W caliber cartridge case submitted as Item 2 was fired in the same firearm as the known cartridge cases, Item 1, which were fired in the suspect's pistol. The questioned 40 S&W caliber cartridge cases submitted as Items 3, 4, and 5 were likely not fired in the same firearm as the known cartridge cases, Item 1.
F9AHFM	Item #1: Three fired cartridge cases from suspect's .40S&W Springfield Armory model XD40 pistol. Item #2: One fired cartridge case (M) recovered from bank. Item #3: One fired cartridge case (N) recovered from bank. Item #4: One fired cartridge case (O) recovered from bank. Item #5: One fired cartridge case (P) recovered from bank. Examination of the submitted cartridge case evidence was conducted, and the findings are as follows: 1. Fired cartridge cases (M through P) are all .40S&W casings manufactured for Federal. 2. Fired cartridge case (M) was fired in the same firearm that fired the test casings submitted as item #1 (suspects' .40S&W Springfield Armory model XD40 pistol).
FA449E	Microscopic examination and comparison reveals the cartridge cases, Items 1, 2 and 4, were fired in the same firearm. Microscopic examination and comparison reveals the cartridge cases, Items 3 and 5, were fired in the same firearm. Microscopic examination and comparison reveals the cartridge cases, Items 1, 2, and 4, were not fired in the same firearm as the cartridge cases, Items 3 and 5. Microscopic examination of the cartridge cases, Items 1, 2, 3, 4 and 5, did not reveal any unique characteristics that could be used to develop a list of possible firearms in which they were fired.
FAE7JR	Item #1 is a Springfield Armory caliber .40 S&W semi-automatic pistol, model XD40, serial number unknown. This firearm was found to be in normal operating condition. Item #2 is a caliber .40 S&W cartridge case, Federal brand, which was identified as having been fired in the Item #1 pistol. Items #3 and #5 are two (2) caliber .40 S&W cartridge cases, Federal brand, which were identified as having been fired in the same firearm. These Items were not fired in the Item #1 pistol. Item #4 is a caliber .40 S&W cartridge case, Federal brand, which lacks sufficient markings to identify or eliminate as having been firearm[sic] in the Item #1 pistol or the same firearm as Items #3 and #5.
FEAXP3	Microscopic comparisons of the evidence cartridge cases, submitted as items #2, #3, #4 and #5, with test cartridge cases reported as having been fired from a Springfield Model XD40 .40 S&W caliber semi-automatic pistol, item #1, revealed matching firing pin impressions, chamber and drag marks to the evidence cartridge case, submitted as item #2. This finding confirms that this particular cartridge case had been fired in the Springfield pistol. Additional microscopic comparisons of the evidence cartridge cases, items #3, #4 and #5, to each other revealed that the evidence cartridge cases submitted as items #3 and #5 had matching breech face and firing pin impressions. These findings confirm that these two (2) particular evidence cartridge cases were fired in the same firearm. All of the evidence cartridge cases exhibited similarities in firing pin and breech face class characteristics to those registered on the test cartridge cases fired by the Springfield pistol. These findings indicate that the evidence cartridge cases could have been fired by the Springfield pistol; however, not in its present condition.
FJ89B3	Item 1 consists of three (3) test fired cartridge cases from the recovered Springfield Armory XD40, 40 S&W semi-auto pistol. Items 2 through 5, spent cartridge cases, were examined and microscopically compared to each other and the test fired cartridge cases in item 1. It was determined that the cartridge case in item 2 was fired in the same firearm that fired the cartridge cases in item 1, the Springfield XD40 pistol. It was also determined that the cartridge cases in items 3 and 5 were fired in the same firearm, but different from the firearm that fired the cases in items 1 and 2. It was determined that the cartridge case in item 4 was fired in a firearm different from that used to fire the cases in items 1 & 2 and 3 & 5 and item

TABLE 2

WebCode	Conclusions
	4. The cartridge cases in items 3, 5 and 4 are identifiable to particular firearms if they are recovered and test fired. The above listed evidence is being retained in the firearms section of the laboratory.
FJMMKX	Examinations showed that Item 2 was discharged within the submitted firearm, .40 S&W Springfield Armory XD40. Examinations showed that Items 3, 4, and 5 were not discharged within the submitted firearm, .40 S&W Springfield Armory XD40. Examinations showed that Items 3 and 5 were discharged within the same unknown firearm. Examinations showed that Item 4 was discharged within a second unknown firearm.
FJZ8Z2	It was determined that: Item 2 was fired in the XD-40 pistol (Item 1). Item 3 and Item 5 were the same caliber as Item 1 but had significant differences microscopically. Item 4 was the same caliber as Item 1 but lacked the microscopic detail necessary to determine whether or not they were fired in the same firearm.
FU9TDV	The spent Federal 40 S&W cartridge case, Item# 2, CTS# 10-526, was microscopically examined and compared with test cartridge cases fired by the Springfield Armory XD40, Item# 1. Numerous corresponding individual characteristics were observed. Therefore, it is my opinion that this spent cartridge case was fired by this firearm. The 3 spent Federal 40 S&W cartridge cases, Item# 3, 4, and 5, CTS# 10-526, were microscopically examined and compared with test cartridge cases fired by the Springfield Armory XD40, Item# 1. It is my opinion that these 3 spent cartridge cases were not fired by this firearm. The 2 spent Federal 40 S&W cartridge cases, Item# 3 and 5, CTS# 10-526, were further microscopically examined and compared with each other. Numerous corresponding individual characteristics were observed. Therefore, it is my opinion that these 2 spent cartridge cases were fired by the same firearm. The spent Federal 40 S&W cartridge case, Item# 4, CTS# 10-526, was also microscopically examined and compared with the 2 spent Federal 40 S&W cartridge cases, Item# 3 and 5, CTS# 10-526. It is my opinion that this spent cartridge case was not fired by the same firearm as the 2 spent cartridge cases under CTS# 10-526.
FX787C	Examination disclosed that Item 2 (DCC) was fired in the same firearm that fired Item 1 (Test DCC). Examination disclosed that item 3 and 5 (DCC) were fired in a second firearm. Examination disclosed that item 4 (DCC) was fired in a third firearm.
G2N8YH	It was determined that the cartridge case in Item 2 was fired in the same firearm as the cartridge cases in Item 1. It was determined that the cartridge cases in Item 3 and 5 were fired in a different firearm than the cartridge cases in Item 1. It is inconclusive as to whether or not the cartridge case in Item 4 was fired in the same firearm as the cartridge cases in Item 1.
G63AZB	The cartridge cases Exhibits 1 through 5 were compared microscopically with each other. Exhibits 1 and 2 were identified as having been fired in a single firearm. Exhibits 3 and 5 were identified as having been fired in a second firearm. Exhibit 4 was fired in a third firearm.
G7VDDJ	One of the four cartridge cases (item 2) was fired from the same firearm as the three submitted test fired cartridge cases (item 1). Two of the cartridge cases (items 3, 5) were fired from the same unknown firearm, however they could neither be identified, nor eliminated as having been fired from the same firearm as the submitted test fires (item 1). One of the cartridge cases (item 4) could neither be identified, nor eliminated as having been fired from the same firearm as the submitted test fires (item 1) or the other fired cartridge cases (items 3, 5).
GCXKMR	Item 2 are[sic] in all probability fired in the same firearm as item 1. Items 3, 4 and 5 are definitely not fired in the same firearm as item 1.

TABLE 2

WebCode	Conclusions
GF7ZMP	The cartridge cases from items 1 and 2 were fired in the same firearm. The cartridge cases from items 3 and 5 were fired in the same firearm, a distinct firearm from the source of items 1 and 2. Item 4 was not fired in either of the firearms that fired items 1, 2, 3, and 5.
GFHA6J	3.1 Three of the questioned cartridge cases labeled as items 2, 3 and 5 were discharged from the same firearm referred[sic] .40S&W caliber Springfield Armory XD 40 handgun. 3.2 The cartridge case labeled as item 4, was not discharged from the firearm .40S&W caliber Springfield Armory XD 40 handgun.
GPKU8C	Item #2 was fired in the firearm that fired the cartridge cases in Item #1. Item #3 and Item #5 were fired in the same firearm. Items #3 and #5 were not fired in the firearm that fired the cartridge cases in Item #1 or in the same firearm as Item #4. Item #4 was not fired in the firearm that fired the cartridge cases in Item #1 or in the same firearm as Items #3 and #5.
GVFBBQ	In my opinion the four questioned cases, Items 2-5 were fired in the suspect Springfield Armory XD40 pistol.
GWUTCC	Items 1 and 2 were fired by the same firearm. Items 3 and 5 were fired by a second firearm. Item 4 was fired by a third firearm.
GXPW3J	Item 2 was identified as having been fired in the same firearm that produced the test fires submitted as item 1. Items 3 and 5 were fired in a second firearm. Item 4 was fired in a third firearm.
H4LPE6	The cartridge cases Exhibits 2, 3, 4, and 5 were compared microscopically with the cartridge cases Exhibit 1. The cartridge case Exhibit 2 was identified as having been fired in the same firearm as the cartridge cases Exhibit 1. The cartridge cases Exhibits 3 and 5 were identified as having been fired in a single firearm; however, they were not fired in the same firearm as the cartridge cases Exhibit 1. The cartridge case Exhibit 4 was not fired in the same firearm as the cartridge cases Exhibit 1 nor was it fired in the same firearm as the cartridge cases Exhibits 3 and 5.
H9LWZ3	Based on agreement of all discernable class and individual characteristics, Item 2 was fired in the same firearm as items 1.1-1.3. Identification using breechface marks. Based on disagreement of individual characteristics items 3, 4 and 5 were not fired in the same firearm as items 1.1-1.3.
HBNLE4	The fired cartridge case of item #2 was microscopically identified as having been fired in the same firearm as the known fired cartridge cases of items #1 (A-C). The fired cartridge cases of items #3 and #5 were microscopically identified as having been fired in a second, unknown 40 S&W caliber firearm. The fired cartridge case of item #4 was found to have some matching individual characteristics with items #3 and #5. However, these were not of sufficient quality or quantity and a positive identification or elimination could not be made. A stronger conclusion may be rendered if/when a suspect firearm is located and submitted for analysis.
HE72NW	1. Examinations showed Item 2 was discharged within the Springfield Armory XD40, caliber: .40 S&W. 2. Examinations showed Items 3, 4 and 5 were not discharged within the Springfield XD40, caliber: .40 S&W, due to differences in class and individual characteristics. 3. Examinations showed Items 3 and 5 were discharged within the same unknown firearm. 4. Examinations showed Items 3 and 5 were not discharged within the same firearm as Item 4 due to differences in individual characteristics. 5. Items 1, 3 and 4 were submitted for NIBIN entry.

TABLE 2

WebCode	Conclusions
HEYD7C	As the result of physical and microscopic examination of the test specimens against the submitted evidence it is my opinion: A/ The .40 S&W caliber discharged cartridge casing mentioned in item 1-4 (CTS item 2) was fired by the Springfield Armory model XD40 pistol that fired the tests in items 1-1, 1-2 and 1-3 (CTS item 1). B/ The .40 S&W caliber discharged cartridge casing mentioned in item 1-5 (CTS item 3) and 1-7 (CTS item 5) were both fired by the same unknown weapon but not the Springfield Armory model XD40 that fired the tests in item 1-1, 1-2 and 1-3 (CTS item 1). C/ The .40 S&W caliber discharged cartridge casing mentioned in item 1-6 (CTS item 4) was fired by an unknown weapon capable of chambering .40 S&W caliber ammunition not the Springfield Armory XD40 pistol that fired the tests in item 1-1, 1-2 and 1-3 (CTS item 1).
HJ3P64	Item - 1 (submitted test-fires) were compared to Items 2 , 3, 4, and 5 with the following results: Item - 2 is identified as having been fired in the same firearm as Item - 1. Item - 3 and Item - 5 can be identified to each other, however, were fired in a different firearm than Item - 1. Item - 4 proved insufficient for identification or elimination, so is inconclusive. (It should be noted that the firearm was not available for examination).
HL4Q8L	Items 1 and 2 were fired in the same firearm. Items 3 and 5 were fired in the same firearm; however, items 3 and 5 were neither eliminated nor identified as having been fired in the same firearm as items 1, 2, or 4. Item 4 was neither eliminated nor identified as having been fired in the same firearm as items 1, 2, 3, or 5.
HMKR93	Expended cartridge Item 2 was discharged from the suspect's weapon. Expended cartridges Item 3 and Item 5 were discharged from the same gun (not the suspect's weapon). Expended cartridge Item 4 was not discharged from the suspect's weapon.
HMXCZC	The fired cartridge cases, items 1 through 5, were examined and microscopically compared to each other. The fired cartridge cases in items 1 and 2 were identified as having been fired in the same firearm. The fired cartridge cases in items 3, 4, and 5 were eliminated as having been fired in the same firearm as items 1 and 2, due to differences in individualizing characteristics. The fired cartridge cases in items 3 and 5 were identified as having been fired in the same firearm. The fired cartridge case in items[sic] 4 was eliminated as having been fired in the same firearm as items 3 and 5 due to differences in individualizing characteristics. Three firearms are represented in the submitted evidence.
HZ7ZBV	Examinations showed Item #2 was discharged within the same firearm as Item #1. Examinations showed Items #3, #4, and #5 were not discharged within the same firearm as Item #1. Examinations showed Items #3 and #5 were discharged within the same unknown firearm. Examinations showed Item #4 was discharged within a second unknown firearm.
JG7K9A	Microscopic examination and comparison reveals the cartridge cases, Items 1 and 2, were fired in the same firearm. Microscopic examination and comparison reveals the cartridge cases, Items 3 and 5, were fired in the same firearm. Microscopic examination and comparison reveals the cartridge cases, Items 1 and 2, were not fired in the same firearm as the cartridge cases, Items 3 and 5. Microscopic examination and comparison reveals the cartridge case, Item 4, was not fired in the same firearm as the cartridge cases, Items 1 and 2, or the same firearm as the cartridge cases, Items 3 and 5.
JHHRAC	As a result of physical and microscopic examination of the above submitted evidence, the following is my opinion: A./ The item 1-2 .40 S&W caliber discharged cartridge case (Item 2) was fired by the .40 S&W caliber Springfield Armory model XD40 pistol that fired the three /3/ tests from item 1-1 (Item 1). B./ The items 1-3 (Item 3) and 1-5 (Item 5) .40 S&W caliber discharged cartridge cases were both fired by the same unknown weapon. They were not fired by the .40 S&W caliber Springfield Armory model XD40 pistol that fired the three /3/

TABLE 2

WebCode	Conclusions
	tests from item 1-1 (Item 1). C./ The item 1-4 .40 S&W caliber discharged cartridge case (Item 4) was not fired by the .40 S&W caliber Springfield Armory model XD40 pistol that fired the three /3/ tests from item 1-1 (Item 1).
JHVU3J	1. The known and questioned cartridge cases submitted with the test CTS 10-526 "Firearms Examination" formed a constitutive part of ammunition .40S&W caliber. 2. As a result of comparative analysis, provide that: 2.1 The questioned cartridge cases .40 S&W caliber, labeled as "Test No 10-526 Item 2", "Test No. 10-526 Item 3" and "Test No 10-526 Item 5" match with the known cartridge cases labelled as "Test No 10-526 Item 1" discharged from the .40 S&W Springfield Armory modelo[sic] XD40 handgun. They were discharged from the suspect's firearm. 2.2 The questioned cartridge cases .40 S&W caliber, labeled as "Test No 10-526 Item 4" no match with the known cartridge cases labelled as "Test No 10-526 Item 1" discharged from the .40 S&W Springfield Armory, modelo[sic] XD40 handgun. Item 4 was discharged with a different suspect's firearm.
JQFX76	Agreements of class and individual characteristics confirmed the item 2 expended cartridge case was fired in the same firearm as the item 1 known test cartridge cases. Disagreements of characteristics confirmed the items 3, 4, and 5 expended cartridge cases were fired in a different firearm than the item 1 known test cartridge cases.
JRAJYW	The test fired cartridge cases were examined and microscopically compared to the evidence items with the following results: Item 2 was determined to have been fired by the same firearm as the test fired cartridge cases. Items 3 and 5 were eliminated as having been fired by the same firearm as the test fired cartridge cases, however; these two cartridge cases were both fired by a second firearm that was not submitted. Item 4 bears some similar general class characteristics as the other items, however; this cartridge case lacks sufficient microscopic detail to conclusively eliminate or identify it as having been fired from the same firearms as the test fired cartridge cases or Items 3 and 5.
JRTLNJ	1. Fired cartridge cases M, N, O + P are all .40 S&W casings manufactured for Federal. 2. Cartridge case M was fired in the .40 S&W Springfield Armory XD 40 pistol. 3. Fired cartridge cases N + P were fired in the same auto loading pistol but not the .40 S&W Springfield Armory XD 40 pistol. 4. Fired cartridge case O was fired in a different firearm than M, N + P.
JT3Y92	I microscopically compared item 1, a test-fired cartridge case, to item 2, a cartridge case recovered from the crime scene. I found agreement in all discernible class characteristics and significant agreement in individual characteristics including breechface marks, firing pin impression marks, and ejection port marks. I concluded that item 2 was fired in the same firearm as item 1. I documented the comparison with photographs and notes. I microscopically compared item 3 to item 5, two cartridge cases recovered from the crime scene. I found agreement in all discernible class characteristics and significant agreement in individual characteristics including firing pin impression marks and ejector marks. I concluded that items 3 and 5 were fired in the same firearm, but not the same firearm as items 1 and 2. I documented the comparison with photographs and notes. I microscopically compared item 1, a test-fired cartridge case, to items 3, 4, and 5. I found some agreement in class characteristics and significant disagreement in individual characteristics including firing pin impression marks. I concluded that items 3, 4, and 5 were not fired in the same firearm as items 1 and 2. I microscopically compared item 3 to item 4. I found some agreement in class characteristics and significant disagreement in individual characteristics including firing pin impression marks. I concluded that items 3 and 4 were not fired in the same firearm.
JX2UAU	1. Examinations showed Item 2 was discharged within the same firearm as Item 1. 2.

TABLE 2

WebCode	Conclusions
	Examinations showed Items 3, 4, and 5 were not discharged within the same firearm as Item 1. 3. Examinations showed Items 3 and 5 were discharged within the same unknown firearm. 4. Examinations showed Item 4 was discharged within a second unknown firearm.
JZQEEJ	Per the case agent, cartridge cases in Item 1 were test-fired in a 40 S&W Springfield Armory XD40 handgun. Only the test-fires and not the handgun were submitted for examination. One of the test-fired cartridge cases from Item 1 was microscopically compared to the submitted evidence fired cartridge cases in Items 2 through 5. Item 2 - Sufficient agreement in class and individual characteristics was observed to conclude that the fired cartridge case in Item 2 was fired in the Springfield Armory handgun, Item 1. Items 3, 4, and 5 - Significant disagreement in individual characteristics was observed to exclude Items 3, 4, and 5 as having been fired in the same firearm as Item 1. Items 3, 4, and 5 were not fired in the Springfield armory handgun that fired Item 1. Items 3, 4, and 5 were microscopically intercompared. Sufficient agreement in class and individual characteristics was observed to conclude that the fired cartridge cases in Items 3 and 5 were fired in the same firearm. Significant disagreement in individual characteristics was observed to exclude Item 4 as having been fired from same firearm as Items 3 and 5. Three firearms were used to fire the cartridge cases in Items 2, 3, 4, and 5.
K3XP6T	The expended cartridge case, Item 2, was fired in the same firearm as the expended cartridge cases, Item 1. The expended cartridge cases, Item 3 & 5, were fired in the same firearm; they could neither be identified nor eliminated as having been fired in the same firearm as the expended cartridge cases, Item 1. The expended cartridge case, Item 4, could neither be identified nor eliminated as having been fired in the same firearm as the expended cartridge cases, Item 1.
K78ZH3	Microscopic comparison of the Item 2 cartridge case to test exemplar cartridge cases, Item 1, reveals positive results. Item 2 was identified as having been fired in the Springfield Armory model XD40 pistol test fired by the submitting agency. Microscopic inter-comparison of Items 3 and 5 reveals positive results. These cartridge cases were identified as having been fired in one (unknown) firearm. Items 3 and 5 are eliminated from having been fired from the Springfield Armory model XD40 pistol that fired Item 1. Item 4 has been microscopically compared to the Item 1 test exemplars and inter-compared to Items 2, 3, and 5 with inconclusive results. Item 4 was neither identified to, nor eliminated from, having been fired in the Springfield Armory model XD40 pistol represented by Item 1 or the unknown pistol represented by Items 3 and 5. Any firearms recovered during the course of this investigation should be submitted for comparison purposes to Items 3, 4 and 5.
KD8BVM	Items 1 & 2 were fired by one firearm, and these items may be suitable for identification with a specific firearm. Items 3 & 5 were both fired by one firearm and may be suitable for identification with a specific firearm. Item 4 may be suitable for identification with a specific firearm. Items 1 & 2 were fired by one firearm, Items 3 & 5 were fired by a second firearm, and Item 4 was fired by a third firearm. Items 1, 3, and 4 were entered into the Integrated Ballistics Identification System (IBIS). Should any "hits" be developed against these entries, you will be notified. Please retain these items for a minimum of two years pending any IBIS activity.
KDLZYY	Exhibit #2 was fired in the same firearms as the test shots from Exhibit #1. Exhibits #3, #4, and #5 were not fired [sic] the firearm represented by the test shots, Exhibit #1. Exhibits #3 and #5 were fired in the same unknown firearm. Exhibit #4 was not fired in the same firearm as Exhibits #3 and #5.
KFBBPR	The questioned cartridge case marked "Item 2" was found to be fired from the same firearm as the known expended cartridge cases marked "Item 1". The questioned cartridge cases

TABLE 2

WebCode	Conclusions
	marked "Item 3", "Item 4" and "Item 5" were not fired from the same firearm as the known expended cartridge cases marked "Item 1".
KJC6XV	Exhibits 1 through 5 were microscopically inter-compared. Silicon rubber casts were prepared to facilitate microscopic examination and comparison and designated 1A1, 1B1, 1C1, 2A, 3A, 4A and 5A. The results are as follows: Based on significant correspondence in firearm produced markings, the expended cartridge case, Exhibit 2, was fired in the same firearm as three expended test fired cases, Exhibit 1. Based on significant differences in firearm produce[sic] markings Exhibits 3, 4 and 5 were not fired in the same firearm as test cartridge cases Exhibit 1. Based on significant correspondence in firearm produced markings expended cartridge cases, Exhibit 3 and Exhibit 5 were fired in the same firearm but different than the firearm that fired cartridge cases Exhibits 1 and 2. Based on significant differences in firearm produced markings, expended cartridge case Exhibit 4 was fired in a different firearm than all remaining exhibits.
KJWVY3	Comparative examinations of Item 2 (one cartridge case) against Item 1 (three cartridge cases said to be test fired cartridge cases from a Springfield Armory Model XD40 40 S&W caliber pistol) showed the presence of matching features. This means that Item 2 and the cartridge cases of Item 1 were fired from the same firearm. Comparative examinations of Items 3, 4 and 5 (three fired cartridge cases) against Item 1 showed the presence of different features. This means that Items 3, 4 and 5 were fired in a different firearm than the cartridge cases of Item 1. Comparative examination of Item 3 against Item 5 showed the presence of matching features. This means that Items 3 and 5 were fired in the same firearm. Comparative examinations of Items 3 and 5 against Item 4 showed the presence of different features. This means that Items 3 and 5 were fired in a different firearm than Item 4.
KKPYCA	Microscopic examination and comparison reveals the cartridge cases, Items 1 and 2, were fired in the same firearm. Microscopic examination and comparison reveals the cartridge cases, Items 1 and 3, were not fired in the same firearm. Microscopic examination and comparison reveals the cartridge cases, Items 1 and 4, were not fired in the same firearm. Microscopic examination and comparison reveals the cartridge cases, Items 1 and 5, were not fired in the same firearm. Microscopic examination and comparison reveals the cartridge cases, Items 3 and 5, were fired in the same firearm. Microscopic examination and comparison reveals the cartridge cases, Items 3 and 4, were not fired in the same firearm. Microscopic examination of the cartridge cases, Items 3, 4 and 5, did not reveal sufficient unique characteristics that could be used to develop a list of possible firearms in which they were fired. The cartridge cases are suitable for comparison to a firearm should one be recovered during the investigation.
KL3BEL	The identifications were made on the basis of class and individual characteristics. The fired cases all had drag marks from the firing pin tip of the weapons that fired them. These marks were individual in nature. The striated firing pin drag marks were examined with a comparison microscope. The agreement seen in the drag marks exceeded the best known non-matching tool marks. Items 1/2 and items 3/5 appeared to have differing class characteristics. Item 4 appeared to have different class characteristics than the other fired cases. It appears that at least three firearms were discharged at the bank. To properly evaluate the variations seen in the class characteristics the firearms used to fire the fired cases would need to be examined.
KPQBUZ	The four fired 40 Smith & Wesson caliber cartridge cases, Items 1 and 2, were identified as having been fired in the same firearm. The two fired 40 Smith & Wesson caliber cartridge cases, Items 3 and 5, were identified as having been fired in the same firearm. Due to differences in individual characteristics, the four fired 40 Smith & Wesson caliber cartridge

TABLE 2

WebCode	Conclusions
	cases, Items 1 and 2, could not have been fired in the same firearm as the two fired 40 Smith & Wesson caliber cartridge cases, Items 3 and 5. The fired 40 Smith & Wesson caliber cartridge case, Item 4, exhibits similar class characteristics as those displayed on the fired 40 Smith & Wesson caliber cartridge cases, Items 1, 2, 3, and 5. However, due to the lack of matching individual detail, Item 4 could neither be identified, nor eliminated as having been fired in the same firearm as Items 1 and 2 or in the same firearm as Items 3 and 5.
KY64J3	Item #2 was identified as being fired by the same firearm as the test shots labeled Item #1. Item #3 and Item #5 were fired by the same firearm, but they could not be identified or eliminated as having been fired by the same firearm as the test shots labeled Item #1. Item #4 could not be identified or eliminated as having been fired by the same firearm as Items #1, #2, #3 or #5.
L2NEYU	1. The cartridge case (Item 2) was discharged from the same firearm as the known cartridge case (Item 1). 2. The cartridge cases (Item 3, 5) were discharged from the same firearm.
L3DKEK	The 40 S&W cartridge casing (item 2) was identified as having been fired in the same firearm that fired the test fires (item 1). Agreement of the characteristics is sufficient to determine that the firearm is the source of the casing. The 40 S&W cartridge casing (item 3) was identified as having been fired in the same firearm as the 40 S&W cartridge casing (item 5). Agreement of the characteristics is sufficient to determine that the two casings were fired in the same firearm. The two 40 S&W cartridge casings (items 3 and 5) could not be conclusively identified or excluded as having been fired in the same firearm that fired the test fires (item 1). However, it is unlikely the casings were fired in the firearm. There was agreement of all discernible class characteristics and disagreement of some characteristics, but the disagreement was insufficient for exclusion. The 40 S&W cartridge casing (item 4) could not be conclusively identified or excluded as having been fired in the same firearm that fired the test fires (item 1). However, it is unlikely the casing was fired in the firearm. There was agreement of all discernible class characteristics and disagreement of some characteristics, but the disagreement was insufficient for exclusion. The 40 S&W cartridge casing (item 4) could not be conclusively identified or excluded as having been fired in the same firearm that fired the two 40 S&W cartridge casings (items 3 and 5). However, it is unlikely the casing was fired in the firearm. There was agreement of all discernible class characteristics and disagreement of some characteristics, but the disagreement was insufficient for exclusion.
L64TRU	The four "FC 40 S&W" caliber cartridge cases (items 2-5) are most consistent with originating from three .40 S&W caliber firearms. The "FC 40 S&W" caliber cartridge case (item 2) was determined to have been fired in the Springfield Armory XD40 handgun that fired the reference cartridge cases (item 1). The three cartridge cases (items 3-5) can be eliminated as being fired in the Springfield Armory pistol which fired the reference cases (item 1). The two "FC 40 S&W" caliber cartridge cases (items 3 & 5) were determined to have been fired in the same unrecovered firearm, but can not be matched to the cartridge case (item 4). The "FC 40 S&W" caliber cartridge case (item 4) bears markings which are most consistent with being fired from a second unrecovered firearm.
LCMCJ9	After making correlations, we obtained the following results: *Items 2 and 4 were fired by the same firearm as the known cartridge cases (item 1). * Items 3 and 5 were fired by the same firearm, but different than the suspect's handgun.
LF46N3	From an intra-comparison of the submitted Federal 40 S&W cartridge cases, it was determined that three different firearms were involved in shooting them. Item 2 was fired in the same firearm that fired the submitted Item 1 cartridge cases. A second firearm was used to fired[sic] Items 3 and 5 and Item 4 was fired in a third firearm.

TABLE 2

WebCode	Conclusions
LNWXXZ	Items #1 - #5, The four (4) question expended casings (Item #2 - #5) were originally components of Federal brand .40 S&W caliber cartridges. Microscopic examination and comparison of the three (3) known expended casings (Item #1) and the four (4) question expended casings (Items #2 - #5) revealed the following: Items #1 & #2 had been fired in the same weapon (the recovered weapon). Items #3 & #5 had been in the same weapon, a second weapon (not recovered). Item #4 had been fired in a third weapon (not recovered).
LYN3F2	The fired casings in Exhibit 1 were microscopically compared to the casings in Exhibits 2, 3, 4 and 5. Based on agreement of class characteristics and sufficient agreement of individual characteristics the casing in Exhibit 2 was fired in the same firearm as fired Exhibit 1. Based on a disagreement of individual characteristics Exhibits 3, 4 and 5 were not fired in the same firearm as fired Exhibit 1.
M2FULB	The questioned cartridge case, .40 S&W caliber, labeled as item 2 recovered from the scene[sic], formed a constitutive part of ammunition .40S&W caliber and was fired from the suspect's firearm .40 S&W caliber Springfield Armory XD40 handgun. The questioned cartridge cases .40 S&W caliber, labeled as items 3 and 5 recovered from the scene[sic], formed a constitutive part of ammunition .40S&W caliber and were fired from the same firearm semiautomatic pistol Springfield Armory, Beretta or Sigarms among others. The questioned cartridge case .40 S&W caliber, labeled as item 4 recovered from the scene[sic], formed a constitutive part of ammunition .40 S&W caliber and was fired from the firearm semiautomatic pistol Springfield Armory, Beretta or Sigarms among others.
M67TF2	Item 2 was identified as having been fired in the suspect's firearm (the firearm reportedly used to produce the Item 1 known test standards). Items 3 and 5 were not fired in the suspect's firearm (the firearm reportedly used to produce the Item 1 known test standards). However, Items 3 and 5 were identified as having been fired in the same unknown firearm. Item 4 could neither be identified nor eliminated as having been fired in the same firearm as Items 1, 2, 3, or 5. Insufficient correspondence of individual characteristics was observed.
M78NC4	The cartridge case described in the item # 3 is .40sw caliber, and it was shot by the same firearm that shot the cartridge cases .40sw caliber described in the item #5 and were not fired by the firearm that shot items #1, 2, 4. The cartridge described in the item # 4 is .40sw caliber and it was shot by a firearm at the same caliber and was not fired by the firearm that shot items # 1, 2, 3, 5.
MCPLJQ	My examinations showed that the fired cartridge cases (Items 2 & 5) only, had been fired in the same firearm as that which fired those of Item 1. The fired cartridge case (Item 3) had been fired in a firearm different to that which fired the fired cartridge case (Item 4).
MGHLZ8	By microscopically examining and comparing the firearms-produced class characteristics and individual detail I determined that the four fired cartridge cases in Items 2 through 5 had been fired in three separate firearms. Items 3 and 5 were fired from the same firearm based on consistent class characteristics and sufficient matching individual detail. Items 2 and 4 were each fired from a separate firearm not related to Items 3 and 5. I microscopically examined and compared the test-fired cartridge cases in Item 1 to the fired cartridge cases in Items 2 through 5 with the following results: I determined that fired cartridge case in Item 2 had been fired from the same pistol as the test-fired cartridge cases in Item 1 based on consistent firearm-produced class characteristics and sufficient matching individual detail. I determined that the fired cartridge cases in Items 3, 4, and 5 had been fired by different firearms based on differences in the firearm-produced class characteristics.
MGJXKC	The Item 1.1 & 1.2 cartridge case were identified as having been fired in the same firearm. The Item 1.3 & 1.5 cartridge cases were identified as having been fired in the same firearm.

TABLE 2

WebCode	Conclusions
MH48Z3	<p>Because of differences in individual characteristics, the Item 1.3 &amp; 1.5 cartridge cases could not have been fired in the same firearm which fired the Item 1.1 &amp; 1.2 cartridge cases. Because of differences in individual characteristics, the Item 1.4 cartridge case could not have been fired in the same firearm which fired the Item 1.1 &amp; 1.2 cartridge cases; nor could it have been fired in the same firearm which fired the Item 1.3 &amp; 1.5 cartridge cases.</p> <p>Microscopic comparisons of Item #2 with the tested fired cartridge cases from Item #1 revealed matching breech face marks and firing pin impressions. This finding confirms that Item #2 was fired from the same firearm as the test fired cartridge cases from Item #1. Microscopic comparisons of Item #3 with Item #5 revealed matching breech face marks and firing pin impressions. This finding confirms that Items #3 and #5 were fired from the same firearm. Microscopic comparisons of Items #3 and #5 with test fired cartridge cases from Item #1 revealed corresponding class characteristics (caliber, breech face style, firing pin style). This finding indicates that Items #3 and #5 could have been fired from the same firearm as the test fired cartridge cases from Item #1. However, there is no indication that these groups were fired from the same firearm. Microscopic comparisons of Item #4 with Items #3 and #5 and the test fired cartridge cases from Item #1 revealed corresponding class characteristics (caliber, breech face style, firing pin style). This finding indicates that Item #4 could have been fired from Item #1. However, there is no indication that Item #4 was fired from the same firearm as Item #1 or Items #3 and #5.</p>
MHU3XZ	<p>The questioned cartridge cases, Items #2 through #5, were examined, documented, and compared with the known cartridge cases, Item #1, with the following results: The unknown cartridge cases in Item #2 was identified as having been discharged from the same firearm as the known expended cartridge cases in Item #1. The unknown cartridge cases in Items #3, 4, 5 could not have been discharged from the same firearm as the known expended cartridge cases in Item #1, because of the differences in class and/or individual characteristics. However, Item #3 and Item #5 are identified as having been discharged by the same firearm.</p>
MRKF4R	<p>Exhibit #1 consists of three (3) test fire cartridge cases, Federal brand, reportedly fired from a .40S&amp;W caliber Springfield Armory model XD40 pistol. Exhibits #2 through #5 consist of four (4) fired .40S&amp;W caliber cartridge cases, Federal brand. Microscopic comparisons between the test fire cartridge cases and the evidence cartridge cases revealed the following: There exists sufficient agreement of individual characteristics to conclude that the Exhibit #2 cartridge case was fired in the same firearm as the Exhibit #1 test fire cartridge cases. Based on differences of individual characteristics, Exhibits #3 and #5 were eliminated as having been fired in the same firearm as the Exhibit #1 test fire cartridge cases. However, sufficient agreement of individual characteristics exists to conclude that Exhibit #3 and Exhibit #5 were fired in the same firearm. Based on differences in class and individual characteristics, Exhibit #4 was eliminated as having been fired in the same firearm as the Exhibit #1 test fire cartridge cases. Also, based on differences of class and individual characteristics, Exhibit #4 was eliminated as having been fired in the same firearm which fired Exhibits #3 and #5.</p>
MTBV32	<p>Item 1 was microscopically compared to Items 2 thru 5 with the following conclusions: 1) Item #1 &amp; 2 were fired by the same firearm, 2) Item #1 was not fired by the same firearm as Items 3 &amp; 5, 3) Items 3 &amp; 5 were fired by the same firearm, 4) Item #4 could not be identified or eliminated as being fired by the same firearm as Item 1 due to the insufficient amount of individual characteristics found on #4.</p>
MTC3P9	<p>1) After performing microscopic examination, it is the opinion of this examiner that evidence Item 2 was fired from the recovered firearm in the scenario given. 2) After performing microscopic examination, it is the opinion of this examiner that evidence Items 3, 4, and 5</p>

TABLE 2

WebCode	Conclusions
	were not fired from the recovered firearm in the scenario given.
MU4724	Examined the four specimens marked #2 through #5. They are .40 S&W caliber discharged shells headstamped: Federal. Compared the test shells against the evidence shell marked #2 with positive results. The evidence shell marked #2 was discharged in the submitted pistol. Compared the two evidence shells marked #3 and #5 against each other with positive results. The two evidence shells marked #3 and #5 were discharged in the same firearm. Compared the test shells against the three evidence shells marked #3, #4, and #5 with negative results. The three evidence shells marked #3, #4, and #5 were not discharged in the submitted pistol. Compared the two evidence shells marked #3 and #5 against the evidence shell marked #4 with negative results. The two evidence shells marked #3 and #5 were not discharged in the same firearm as the evidence shell marked #4.
MXGF27	Ex #2 was fired in Ex #1. Ex #3 & 5 were fired in the same fa. Ex#3 & 5 could not be identified or eliminated as having been fired in Ex #1 or the same fa as Ex #4. Ex #4 could not be identified or eliminated as having been fired in Ex #1 or the same fa as Exhibits #3 & 5.
N47CDN	Item 2 was fired in the suspect's weapon. Items 3, 4, and 5 were not fired in the suspect's weapon. Items 3 and 5 were both fired from the same unrecovered weapon.
NE7DVU	Comparison microscop examination for the four cartridges cases collected from the floor (scene) submitted in items nos: 2-5 reveal that: A - The three cartridge cases mention in items nos: 2, 3 and 5 has same markings and fired from one firearm caliber 40. B - The forth cartridge case in item no. 4 fired from another firearm with same caliber 40. C - The cartridge cases in items no. 2, 3 and 5 has markings matching with those cartridge cases expended from suspect weapon submitted in item no. 1 and all fired from the same firearm. [sic]
NJG39F	Microscopic comparison examinations of Item 1 with Item 2, Item 3, Item 4 and Item 5 revealed: Item 2 was fired with the same firearm as Item 1. Item 3 and Item 5 were fired with the same unknown firearm. Item 3 and Item 5 were not fired with the same firearm as Item 1 and Item 2 due to microscopic differences in breech face, firing pin and ejector port markings. Item 4 was not fired with the same firearm as Item 1 and Item 2 due to differences in breech face and firing pin microscopic markings. Item 4 could not be identified or eliminated as having been fired with the same firearm as Item 3 and Item 5 due to similar class characteristics and lack of agreement of microscopic marks.
NKGJLJ	The three expended cartridge cases (Item 1) were submitted by the investigating agency and were reportedly fired in the suspect's pistol. The expended cartridge case (Item 2) was microscopically compared to the three expended cartridge cases (Item 1), reported to have been fired in the suspect's pistol, with positive results. The expended cartridge cases (Items 1 and 2) were identified as having been fired from the same firearm. The expended cartridge cases (Items 3 and 5) were microscopically compared to one another with positive results. The expended cartridge cases were identified as having been fired in the same firearm. The expended cartridge cases (Items 1 and 2) were microscopically compared to the two expended cartridge cases (Items 3 and 5) with inconclusive results. The two groups of expended cartridge cases could neither be identified nor eliminated as having been fired in the same firearm. The expended cartridge case (Item 4) was microscopically compared to the two groups of expended cartridge cases (Items 1 and 2 and Items 3 and 5) with inconclusive results. The expended cartridge case could neither be identified nor eliminated as having been fired in the same firearm as the two groups of cartridge cases.
NNLXXH	2.1 There is sufficient agreement of individual characteristics and an agreement of class

TABLE 2

WebCode	Conclusions
NRELXQ	<p>characteristics, therefore the fired cartridge cases marked Items #1 (three cartridge cases) and Item #2 were all fired in the same firearm. 2.2 There is agreement of class characteristics but significant disagreement of individual characteristics, therefore the fired cartridge cases marked Items #3, #4 and #5 were not fired in the same firearm as the cartridge cases mentioned in 2.1 (Items #1 and #2).</p>
NRELXQ	<p>Exhibits 1 through 5 are fired .40 S&amp;W caliber, Federal brand, centerfire cartridge cases that bear marks of value for comparison. Microscopic comparison identified Exhibits 1 and 2 as having been fired in the same auto-loading type firearm based on the sufficient correspondence of individual characteristics. Additionally, Exhibits 3 and 5 were identified as having been fired in the same auto-loading type firearm based on the sufficient correspondence of individual characteristics. It is noted that Exhibits 1 and 2 were fired in a different firearm than the one that fired Exhibits 3 and 5. Exhibit 4 was excluded as having been fired in the firearms that fired Exhibits 1, 2, 3 and 5 based on a class characteristic difference.</p>
NT6ZWZ	<p>Before examination the cartridge cases recovered from the bank after the armed robbery were marked T1 (Item 2), T2 (Item 3), T3 (Item 4) and T4 (Item 5). The cartridge cases that were discharged using the suspects[sic] handgun were marked V1, V2 and V3. These cartridge cases were compared using a Leica S6E Stereo Microscope and a Leica FSC comparison Microscope. The cartridge cases bear appropriate marks that make them suitable for comparative analysis. Identification of the firearm used, based on these marks, appears to be possible. Based on the observed similarities in the individual characteristics of T1 and V1, V2 and V3 it is concluded that the cartridge case T1 was discharged from the suspect's firearm. Because of clear differences in the individual characteristics, the chance that T2, T3 and T4 were discharged from the suspects[sic] handgun is considered virtually[sic] non existent.</p>
NWBC43	<p>The fixed FED 40 S&amp;W cc (Item 2) was fired in the Sprgfld Armory XD-40 pistol the[sic] fired the cc's (Item 1). The fired FED 40 S&amp;W cc's (Items 3, 4, 5) were not fired in the Sprgfld Armory XD-40 pistol that fired the cc's (Item 1). The fired FED 40 S&amp;W cc's (Items 3, 5) were fired in the same FA; a different FA from the one that fired the FED 40 S&amp;W cc (Item 4) or the Sprgfld Armory XD-40 pistol that fired the cc's (Item 1). Casts were made of the fired cc's and will be retained in the FA Section of the laboratory. The submitted cc's will be retained in the training files of the FA Section.</p>
P3PKWQ	<p>Item #2 was discharged in the same firearm as Item #1. Item #4 was not discharged in the same firearm as Item #1. Item #3 and item #5 were inconclusive to having been discharged in item #1. Item #3 and item #5 were discharged in the same firearm. #3 and #5 inconclusive to item #1, however #3 and #5 are positive to each other.</p>
P7QAE6	<p>The cartridge case Item 2 was fired in the same firearm as Item 1A (test). The cartridge case Item 1A (test) will be entered into the NIBIN Database. The cartridge cases Items 3 and 5 were both fired in the same unknown firearm. The cartridge cases Items 3 and 5 were not fired in the same firearm as Item 1A (test). The cartridge case Item 3 will be entered into the NIBIN Database. The cartridge case Item 4 was not fired in the same firearm as the cartridge cases Items 3 or 5. The cartridge case Item 4 was not fired in the same firearm as Item 1C (test). The cartridge case Item 4 will be entered into the NIBIN Database.</p>
P8KH6U	<p>The item 2 cartridge case was identified as having been fired in the same pistol that fired the item 1 cartridge cases. The remaining submitted cartridge cases, items 3 through 5, were eliminated as having been fired in the same pistol that fired the item 1 cartridge cases. The item 3 and 5 cartridge cases were identified as having been fired in a second, unknown firearm. The item 4 cartridge case was fired in a third unknown firearm.</p>

TABLE 2

WebCode	Conclusions
P9FRMC	Microscopic examination and comparison reveals the cartridge cases, Items 1 and 2, were fired in the same firearm. Microscopic examination and comparison reveals the cartridge cases, Items 3 and 5, were fired in the same firearm. Microscopic examination and comparison reveals the cartridge case, Item 4, was not fired in the same firearm as the cartridge cases, Items 1, 2, 3, and 5. Microscopic examination and comparison reveals the cartridge cases, Items 3 and 5, were not fired in the same firearm as the cartridge cases, Items 1 and 2. Microscopic examination of the cartridge cases, Items 3, 4, and 5, did not reveal sufficient characteristics that could be used to develop a list of possible firearms in which they were fired. The cartridge cases, Items 3, 4, and 5, are suitable for comparison to a firearm should one be recovered during the investigation.
PCWN7P	The recovered cartridge cases (Item 2, 3, 4 and 5) were microscopically examined and compared to the test-fired cartridge cases (Item 1). Item 2 and 1 had matching microscopic details in firing pin drag marks, firing pin and breech face impressions. It was confirmed that Item 2 was fired from the same firearm as the test-fired cartridge cases (Item 1). Item 3, 4 and 5 were distinguishable from Item 1 based on significant differences in firing pin drag marks, firing pin and breech face impressions. It was further concluded that Item 3 and 5 were fired from the same firearm but not the recovered gun. Item 4 was fired from a third firearm.
PDLL42	Item 2 and 4 were fired in the same firearm as Item 1. Items 3 and 5 were fired in a second firearm.
PEF3AQ	There are sufficient individual characteristics present to identify item 2 as having been fired in the Springfield Armory pistol, model XD40 that fired items 1 (T1, T2, T3). There are sufficient individual characteristics present to identify item 3 and item 5 as having been fired in a second firearm. Due to class characteristic differences, items 3 and 5 can be eliminated from being fired in the Springfield Armory pistol. Due to class characteristic differences, item 4 can be eliminated from being fired in the Springfield Armory pistol (test fires item 1 (T1, T2, T3)) and items 3 and 5.
PH3ZW2	Exhibits 1 and 2 - These cartridge cases were compared microscopically with each other. They were fired in a single firearm. They lack suitable imaging characteristics for the NIBIN database. Exhibits 3 and 5 - These cartridge cases were compared microscopically with each other and the cartridge cases Exhibits 1 and 2. They were fired in a single, second firearm (different from that which fired the cartridge cases Exhibit 1 and 2). They lack suitable imaging characteristics for the NIBIN database. Exhibit 4 - This cartridge case was compared microscopically with Exhibits 1 through 3 and 5. It was fired in a different firearm from that which fired the cartridge cases Exhibits 3 and 5. Significant differences in individual characteristics between this cartridge case and Exhibits 1 and 2 indicate that a different (third) firearm may be involved.
PL2EKQ	The four expended cartridge cases "item 2-5", recovered from the bank, have been fired from three different weapons. The cartridge case "item 2" has been fired in the suspect's handgun, the two cartridge cases "item 3" and "item 5" have been fired in a second weapon and the cartridge case "item 4" has been fired in a third weapon.
PN8UYA	It is our opinion that Item 2 was fired in the same firearm as Item 1 (Item 1A, Item 1B and Item 1C). We were unable to identify or eliminate Item 3, Item 4, or Item 5 as having been fired in the same firearm as Item 1.
PUX4A9	The cartridge case in Submission 2 was fired in the same firearm that fired the test cartridge cases in Submission 1. The cartridge cases in Submission 3 through 5 bear some similarities in class characteristics with those produced by the gun in Submission 1, but could not be

TABLE 2

WebCode	Conclusions
	positively included or excluded as having been fired in the firearm in Submission 1 to the exclusion of all other firearms bearing the same class characteristics.
PXJPJH	Microscopic comparison of item 2 to the known's[sic] submitted as item 1 reveal item 2 was fired from the same firearm as item 1. Microscopic comparison of items 3 and 5 to each other reveal they were fired from the same firearm. Microscopic comparison of items 3 and 5 to the known's[sic] submitted as item 1 reveal they were not fired from the same firearm as item 1. Microscopic comparison of item 4 to all submitted items was not conclusive without examination of the responsible firearm(s).
PYQDBT	a) The three (3) #1, .40 Smith & Wesson cartridge cases were reportedly test fired in a Springfield Armory model XD40, .40 Smith & Wesson, semiautomatic pistol which was recovered from a suspect in an armed bank robbery. The #'s 2, 3, 4 and 5, .40 Smith & Wesson cartridge cases were reportedly recovered from the bank floor, after the robbery. B) The #'s 1, 2, 3, 4 and 5, .40 Smith & Wesson cartridge cases were all examined and compared microscopically. All of these cartridge cases have at least some parallel breech face marks and hemispherical shaped firing pin impressions with granular detail and firing pin drag marks. All of these items also have defined extractor and ejector marks, as well as case wall marks. There are similarities between the class characteristics of all of these cartridge cases. There is significant agreement between the individualizing characteristics of the #1, test fired cartridge cases and those of the #2, evidence cartridge case. There is also significant agreement between the individualizing characteristics of the #'s 3 and 5, evidence cartridge cases, but these individualizing characteristics are different from those of the #'s 1 and 2 cartridge cases. The #4, evidence cartridge case has individualizing characteristics which are different from those of all the other cartridge cases in this test. 1) The #2, evidence cartridge case was fired in the same firearm in which the #1, test fired cartridge cases were fired. 2) The #'s 3 and 5, evidence cartridge cases were fired in the same firearm, but not in the same firearm in which the #1, test fired cartridge cases were fired. 3) The #4, evidence cartridge case was not fired either in the same firearm in which the #1, test fired cartridge cases were fired, or in the same firearm in which the #'s 3 and 5, evidence cartridge cases were fired. 4) The class characteristics of the #'s 3 and 5, evidence cartridge cases, and of the #4, evidence cartridge case, are similar to, but not limited to, those produced by some .40 Smith & Wesson, semiautomatic pistols of the following brands: Heckler & Koch, Sig Sauer, Springfield Armory, Star and Walther.
Q2ZWGD	Items 1a, 1b, and 1c were identified as having been fired in the same firearm, designated Firearm 1. Item 2 was identified as having been fired in Firearm 1. Items 3, 4, and 5 were eliminated as having been fired in Firearm 1. Items 3 and 5 were identified as having been fired in the same firearm, designated Firearm 2. Item 4 was eliminated as having been fired in Firearm 2; item 4 was fired in designated Firearm 3.
Q74G2T	A. Item #2, expended cartridge case was discharged in the same firearm as was Item #1, test-fired cartridge cases. B. The Items #3, #4, and #5, expended cartridge cases, were not discharged in the same firearm as were Items #1 and #2, expended cartridge cases.
QA6KVZ	Item 1B was fired in the same firearm that fired 1A. Item 1C & 1E were fired in the same firearm, but were not fired in 1A. Item D was not fired in the same firearm that fired 1A, 1B, 1C or 1E.
QCNVBR	The fired 40 caliber cartridge case in item 2 was determined to have been fired in the same weapon as the three (3) fired 40 caliber cartridge cases in item 1. The three (3) fired 40 caliber cartridge cases in items 3, 4, and 5 were determined not to have been fired in the same weapon as the three (3) fired 40 caliber cartridge cases in item 1.

TABLE 2

WebCode	Conclusions
QHCFE8	Done the comparison between the four cartridge cases recovered from the scene with those expended from the suspect's firearm, it is determined that there were discharged from the suspect's firearm.[sic]
QV2F7A	The cartridge cases labeled as item 2 and 1 (known) were fired from the same firearm. The cartridge case, labeled as item 3, 4 and 5 were not fired from the suspect's firearm. The cartridge cases labeled as item 3 and 5 were fired from the same firearm.
QVMNWR	Exhibit 1 consist of three (3) caliber .40 S&W cartridge cases, Federal brand. Exhibits 2 through 5 consist of four (4) caliber .40 S&W cartridge cases, Federal brand. A microscopic comparison was conducted between Exhibit 2 and the Exhibit 1 test fires. There is agreement of all discernible class characteristics and sufficient agreement of individual matching markings to determine that Exhibit 2 was fired in the same firearm as Exhibit 1. A microscopic comparison was conducted between Exhibit 3 and Exhibit 5. There is agreement of all discernible class characteristics and sufficient agreement of individual matching markings to determine that Exhibit 3 and Exhibit 5 were fired in the same firearm. A microscopic comparison was conducted between Exhibits 3 and 5 and the Exhibit 1 test fires. Due to a difference in class and individual characteristics, Exhibit 3 and 5 were not fired in the same firearm as the Exhibit 1 test fires. A microscopic comparison was conducted between Exhibit 4 and Exhibits 1, 2, 3 and 5. Due to a difference in class and individual characteristics Exhibit 4 was not fired in the same firearm as Exhibits 1, 2, 3 and 5.
QY6YMG	The cycle of fire impressions on the questioned cartridge cases (Items 2-5) were microscopically compared to the cycle of fire impressions on the Item 1 test fired cartridge cases. During the comparison, agreement of class characteristics was noted between the Items 2, 3 and 5 cartridge cases and the Item 1 test fired cartridge cases. Due to insufficient quantity and quality of individualizing markings, Item 2 cannot be eliminated or identified as having been fired from the same weapon as the Item 1 cartridge cases. Items 3 and 5 were eliminated as having been fired from the same weapon as the Item 1 cartridge cases based upon differences in individualizing markings. Item 4 was eliminated from having been fired from the same weapon as the Item 1 cartridge cases based upon differences in class characteristics.
R3VKYB	The questioned cartridge case item 2 was discharged from the firearm ".40 S&W Springfield Armory XD 40". This was as a result of comparison between items 2 and 1 respectively. The questioned cartridge cases items 3 and 5 were discharged from the same firearm which is different from the suspect's firearm which fired the item 2.
R69B6Y	The cartridge case in item 2 was identified as having been fired in the firearm that fired the cartridge cases in item 1. The cartridge case in item 3 was identified as having been fired in the same firearm as item 5. The cartridge cases in items 3, 4, and 5 could not be identified or excluded as having been fired in the same firearm as items 1 and 2. However, similar class characteristics indicate that the three cartridge cases in items 3, 4, and 5 could have been fired in the same firearm as the cartridges in item 1. The cartridge case in item 4 could not be identified or excluded as having been fired in the same firearm as items 3 and 5. Microscopic examination of the cartridge case in item 4 revealed insufficient individual characteristics for identification. Similar class characteristics indicate that the cartridge case in item 4 could have been fired in the same firearm that fired items 3 and 5 or any other firearm having similar class characteristics.
R7JLXQ	2.1 Three (3) .40 Smith and Wesson calibre test fired cartridge cases marked by me "103771/10" each and "1A", "1B" and "1C" respectively. 2.2 Four (4) .40 Smith and Wesson calibre fired cartridge cases marked by me "103771/10" each and "2", "3", "4" and "5" respectively. I examined the fired cartridge cases mentioned in paragraphs 2.1 and 2.2 and

TABLE 2

WebCode	Conclusions
	<p>compared the individual and class characteristics markings transferred to them by firearm components during the firing process using a comparison microscope and found: 4.1 The cartridge cases mentioned in paragraphs 2.1 and 2.2 marked "103771/10" each and "1A", "1B", "1C" and "2" respectively, were fired in one firearm. 4.2 The cartridge cases mentioned in paragraph 2.2 marked "103771/10" each and "3" and "5" respectively, were fired in a second (2nd) firearm. 4.3 The cartridge case mentioned in paragraph 2.2 marked "1073771/10 4" was fired in a third (3rd) firearm.</p>
REGTUJ	<p>Examination/Conclusion Exhibits 2 through 5 were microscopically examined and compared to the test fired cartridge cases in Exhibit 1. Exhibit 2 was fired in the same pistol that produced the Exhibit 1 test fired cartridge cases. Exhibits 3 and 5 were not fired in the pistol that produced the Exhibit 1 test fired cartridge cases; however they were both fired in the same firearm. Exhibit 4 was not fired in the same pistol that produced the Exhibit 1 test fired cartridge cases or the firearm that fired Exhibits 3 and 5.</p>
RPAGJR	<p>Comparative examinations of Item 2 (a 40 S&amp;W caliber cartridge case) against Item 1 (three test fired 40 S&amp;W caliber cartridge cases) showed the presence of matching features. This means that Item 2 was fired in the same firearm that fired Item 1. Comparative examinations of Items 3, 4 and 5 (three 40 S&amp;W caliber cartridge cases) against Item 1 showed the presence of different ejector mark features. This means that Items 3, 4 and 5 were not ejected from the firearm that was used to eject Item 1. Comparative examinations of Item 3 against Item 5 showed the presence of matching features indicating they were fired from the same firearm.</p>
RQ4L2Z	<p>1) The cartridge case described in the Item #3 is .40 S&amp;W caliber, and it was shot by the same firearm that shot the cartridge case .40 S&amp;W caliber described in the Item #5 and were not fired by the firearm that shot Items #1, 2, 4. 2) The cartridge case described in the Item #4 is .40 S&amp;W caliber, and it was shot by a firearm of the same caliber and was not fired by the firearm that shot Items #1, 2, 3, 5.</p>
RVF2GW	<p>Exhibit #2 was fired in Exhibit #1. Exhibits #3 &amp; #5 were both fired in the same unknown firearm. Exhibits #3 &amp; #5 were not fired from Exhibit #1. Exhibit #4 could not be identified or eliminated as having been fired in Exhibit #1. Exhibit #4 could not be identified or eliminated as having been fired in the same firearm as Exhibits #3 &amp; #5.</p>
RXVQBF	<p>Item 2 was identified as having been fired from Item 1. Items 3 and 5 were fired from the same firearm. Items 3 and 5 were not fired from Item 1. Item 4 was neither fired from Item 1 nor from the same firearm that fired Items 3 and 5.</p>
T3D2LG	<p>Items 1 through 5 are .40 S&amp;W caliber cartridge cases bearing the headstamp of Federal. Item 2 was identified as having been fired in the same firearm as the Item 1 cartridge cases. Items 3 and 5 were identified as having been fired in the same firearm. Due to a difference in class characteristics Item 3 and 5 weren't fired in the same firearm as Items 1 and 2. Due to a difference in class characteristics Item 4 was not fired in the same firearm as Items 1 and 2 and Items 3 and 5.</p>
T8RQ9Y	<p>Item 1 (test shots) and Item 2 (fired cartridge case) were identified as having been fired in the same firearm. Items 3 and 5 (fired cartridge cases) were identified as having been fired in the same firearm. Item 1 (test shots) and Item 4 (fired cartridge case) could not be identified or eliminated as having been fired in the same firearm as Items 3 and 5 (fired cartridge cases); however, differences exist which may be indicative of more than one firearm being involved. Item 4 (fired cartridge case) could not be identified or eliminated as having been fired in the same firearm as Item 1 (test shots).</p>

TABLE 2

WebCode	Conclusions
TFZHZG	The cartridge case Item 2 was discharged in the same firearm as the known expended cartridge cases Item 1. The cartridge cases Item 3 and Item 5 were expended in a different gun. We are not sure whether the cartridge case Item 4 was or was not expended in the same gun as the cartridge cases Item 1. The cartridge cases Item 3 and 5 were fired from the same gun.
TJNTCT	The submitted test fired cartridge cases (Exhibit 1) were microscopically compared to each other and to the four fired cartridge cases (Exhibit 2-5). Based on an agreement of class characteristics and sufficient agreement of individual characteristics, Exhibit 2 was fired in the same firearm as Exhibit 1. Based on a disagreement of individual characteristics, Exhibits 3 thru 5 were not fired in the same firearm as Exhibit 1.
TLKHD9	The four cartridge cases analyzed were fired from three different firearms but the same caliber. The cartridge case labeled as item 2 was fired from the .40 S&W caliber Springfield Armory XD40 handgun (item 1). The cartridge cases labeled as items 3, 4 and 5 were not fired from the suspect's firearm (item 1). However the cartridge cases items 3 and 5 were fired from the same firearm .40 S&W caliber.
TP873F	Group I: The Item 2 cartridge case was identified as having been fired in the Item 1 pistol. Group II: The Item 3 and Item 5 cartridge cases were identified as having been fired in the same firearm. Group III: Due to a lack of sufficient corresponding individual microscopic marks of value, it could not be determined if the Item 4 cartridge case was fired from the same firearm as the Item 3 and Item 5 cartridge cases or the Item 1 pistol.
TYV4RY	The .40 S&W caliber, Federal, fired cartridge case (Item 2) is identified as having been fired in the submitted .40 S&W caliber, Springfield Armory, Model XD40 handgun. The .40 S&W caliber, Federal, fired cartridge cases (Items 3, 4, and 5) could not be identified or eliminated as having been fired in the submitted .40 S&W caliber, Springfield Armory, model XD40 handgun.
TYVZJH	1) The Exhibit 1 and Exhibit 2 cartridge cases were fired in the same firearm. 2) The Exhibit 3 and Exhibit 5 cartridge cases were fired in the same firearm. This was a different firearm than Exhibit 1. 3) The Exhibit 4 cartridge case was not fired in the same firearm as Exhibit 1-3 & 5.
U2DJVZ	Item #2 was identified as having been fired from the same firearm as the submitted test shots (item #1). Item #'s 3 and 5 were identified as having been fired from the same firearm. They exhibit the same class characteristics as items #'s 1 and 2; however, differences in individual characteristics would suggest they were fired from a different, second firearm. Item #4 also exhibits the same class characteristics as items #'s 1, 2, 3 and 5; however, differences in individual characteristics would suggest it was fired from a different, third firearm.
U46YCH	1. The cartridge case, Exhibit 2, was fired in the same firearm as the cartridge cases, Exhibit 1. 2. The cartridge cases, Exhibits 3 and 5, were fired in a single firearm. They were not fired in the same firearm as the cartridge cases, Exhibits 1 and 2. 3. The cartridge case, Exhibit 4, was not fired in the same firearm as either of those used to fire the cartridge cases, Exhibits 1 and 2, or the cartridge cases, Exhibits 3 and 5.
U6KR9Q	Item 2 expended cartridge case was fired in the same firearm (suspect's firearm) as the Item 1 known standards. Items 3, 4 and 5 expended cartridge cases were not fired in the same firearm (suspect's firearm) as the Item 1 known standards. Items 1, 2, 3, 4 and 5 expended cartridge cases were fired in three different firearms as follows: Items 1 and 2 were fired in the same firearm (firearm #1). Items 3 and 5 were fired in the same firearm

TABLE 2

WebCode	Conclusions
	(firearm #2). Item 4 was fired in a firearm different from the one that fired Items 1 and 2 and the one that fired Items 3 and 5 (firearm #3).
U7PFEF	The spent casing described in the item #3 in addition to the spent casing described in the item #5 were fired by the same firearm. The spent casing described in the item #4 was fired by a firearm, but not by the same firearm that fired the spent casings described in the items #3 and #5.
UBNKGZ	One fired cartridge case, Item #2, is identified as having been fired in the same firearm as the known samples, Items 1A-1C. Item 3 and Item 5 are identified as having been fired in the same firearm. They can be neither identified nor eliminated as having been fired in the same firearm as Items 1, 2, and 4. (Inconclusive). Item 4 can be neither identified nor eliminated as having been fired in the same firearm as Items 1, 2, 3, and 5. (Inconclusive).
UDXLL8	The item 2 cartridge case was fired in the same firearm as the submitted known fired cartridge cases, item 1. Items 3 and 5 were fired in the same firearm. We are unable to identify or eliminate items 3, 4, or 5 as having been fired in the same firearm as the item 1 cartridge cases.
UNUMTH	The reference fired cartridge cases obtained from the Springfield Armory pistol, specimen #1, were compared to the .40 S&W caliber fired cartridge cases, specimens #2 through #5. Further examination revealed the following: Specimen #2 was fired in the Springfield Armory pistol, Specimen #1. Specimens #3 and #5 were fired in the same weapon; however, they were not fired in the Springfield Armory pistol, Specimen #1. Specimen #4 was fired in a third weapon; however, it was not fired in the Springfield Armory pistol, Specimen #1.
URB2LH	The fired casing in Item #2 was fired in/from the same firearm as the test-fired casings in Item #1. The fired casings in Items #3, #4, #5 are all eliminated as having been fired in/from the same firearm as the test-fired casings in Item #1.
UT3B3D	Microscopic examination of test fired cartridge cases item 1 and evidence fired cartridge cases items 2, 3, 4, and 5 has disclosed: Item 2 evidence fired cartridge case and item 1 test fired cartridge cases, were fired with the same firearm. Items[sic] 3 and items[sic] 5 evidence fired cartridge cases were fired with the same unknown firearm, firearm not submitted. Comparison of items 3 and 5 evidence fired cartridge cases to item 1 test fired cartridge case has disclosed that they were not fired with the same firearm due to significant differences of individual microscopic markings on breech face and in firing pin indentations. Test fired cartridge case item 1 and evidence fired cartridge case item 4 were not fired with the same firearm due to significant differences of individual microscopic markings on breech face and in firing pin indentations. Microscopic comparison of evidence fired cartridge case item 4 to evidence fired cartridge cases items 3 and 5 has disclosed similarities of breech face and firing pin class characteristics but lack sufficient individual markings to permit a positive identification. They can therefore not be identified or eliminated as having been fired with the same firearm.
UT7JNJ	Exhibit #2 was fired in Exhibit #1. Exhibits #3 and #5 were fired in the same firearm. They were not fired in Exhibit #1. Exhibit #4 was not fired in the same firearm as Exhibits #3 and #5 or in Exhibit #1. Note: It is impossible to treat this test the same as real casework due to the absence of a firearm with which to perform testing. Additional exemplars might add information to the exam. I generally exercise extra caution when eliminating on individual characteristics and like to have repeating patterns in both groups (not just 1 cc that may be "oddball" in pressure/markings etc.). The ejector shape of Ex #4 appears different than Ex's #1a, 1b, 1c, 2, 3, & #5; however, I would rarely eliminate based on this class difference alone. If elimination was made in real casework on Ex #4 to other Ex's it would primarily be

TABLE 2

WebCode	Conclusions
UYFVPQ	<p>based on individual characteristic differences. In casework the verbiage "differences in individual characteristics indicate that another firearm may have been used" is available to the examiner should it fit the scenario.</p> <p>The preliminary investigation showed that the three cartridge cases #1 (marked A, B and C) and the four cartridges[sic] cases #2, #3, #4 and #5 were of the same caliber and showed the same class characteristics. In answer to the posed question and with the findings of the preliminary investigation in mind the following two hypotheses were tested: Hypothesis H1: The cartridge cases #2, #3, #4 and #5 were discharged from the same firearm as the three cartridge cases #1. Hypothesis H2. The cartridge cases #2, #3, #4 and #5 were discharged from one or more other firearms in the same caliber and producing the same class characteristics as the firearm used to discharge the cartridge cases #1. Conclusions: The findings with respect to cartridge case #2 are much more likely under H1 then[sic] under H2. The findings with respect to the cartridge cases #3, #4 and #5 are much more likely under H2 then[sic] under H1. The preliminary investigation showed that the marks in cartridge case #4 differ from those in cartridge cases #3 and #5, indicating that a total of three firearms were fired during the incident. With the fore mentioned conclusion and the given scenario in mind the following additional two hypotheses were tested: Hypothesis H3: The cartridge cases #3, #4 and #5 were discharged from the same firearm. Hypothesis H4: The cartridge cases #3, #4 and #5 were discharged from two or three different firearms, with the same caliber and producing the same class characteristics. Conclusions: The findings with respect to cartridge case #3 and #5 are much more likely under H3 then[sic] under H4. The findings with respect to cartridge case #4 are much more likely under H4 then[sic] under H3. The latter means that the findings are much more likely when cartridge case #4 is discharged from another firearms[sic] then[sic] cartridge case #3 and #5.</p>
V3DRRQ	<p>The submitted fired cartridge casings (Exhibit 1) were microscopically compared to each other and to the submitted Items (Exhibits 2, 3, 4 and 5). Based on an agreement of class characteristics and sufficient agreement of individual characteristics, Exhibits 1 and 2 were fired from the same firearm. Based on an agreement of class characteristics but a disagreement of individual characteristics Exhibits 3, 4 and 5 were not fired from the same firearm as Exhibit 1.</p>
V443HJ	<p>1. Examinations showed that the discharged cartridge case in Item 2 was discharged within the same firearm used to discharge the test cartridge cases in Item 1. 2. Examinations showed that the discharged cartridge cases in Item 3, Item 4 and Item 5 were not discharged within the same firearm used to discharge the test cartridge cases in Item 1. 3. Examinations showed that the discharged cartridge cases in Item 3 and Item 5 were discharged within the same unknown firearm. 4. Examinations showed that the discharged cartridge case in Item 4 was not discharged within the same unknown firearm used to discharge the cartridge cases in Item 3 or Item 5.</p>
V6AGVQ	<p>The three fired 40 Smith and Wesson caliber cartridge cases from Item 1 were identified as having been fired in the same firearm as the fired 40 Smith and Wesson caliber cartridge case, Item 2. The two fired 40 Smith and Wesson caliber cartridge cases, Items 3 and 5, were identified as having been fired in the same firearm. Due to differences in individual characteristics, the four fired 40 Smith and Wesson caliber cartridge cases from Items 1 and 2 could not have been fired in the same firearm as the fired 40 Smith and Wesson caliber cartridge cases, Items 3 and 5. The fired 40 Smith and Wesson caliber cartridge case, Item 4, exhibits similar class characteristics as those displayed on the four fired 40 Smith and Wesson caliber cartridge cases from Items 1 and 2. However, due to the lack of matching individual detail, Item 4 could neither be identified nor eliminated as having been fired in the same firearm as Items 1 and 2. The results of these examinations are inconclusive. Due to</p>

TABLE 2

WebCode	Conclusions
	differences in individual characteristics, the fired 40 Smith and Wesson caliber cartridge case, Item 4, could not have been fired in the same firearm as Items 3 and 5.
V742NH	Microscopic examination and comparison of the fired cartridge case (Item 2) with the test fired cartridge cases (Item 1) from the Springfield XD40 .40 S&W pistol revealed sufficient evidence to conclude that cartridge cases (Items 1 and 2) were fired from the same firearm. Microscopic examination and comparison of the fired cartridge cases (Items 3, 4, and 5) with the test cartridge cases (Item 1) revealed sufficient evidence to conclude that the cartridge cases (Item 3, 4, and 5) were not fired in the firearm that fired the test cartridge cases (Item 1). However, there is sufficient evidence to conclude that the cartridge cases (Items 3 and 5) were fired in the same firearm.
VCUKWR	The cartridge cases submitted Items 1a, 1b, 1c & 2 were all discharged in the same firearm. The cartridge cases submitted Items 3, 4 & 5 were not discharged in the same firearm as Items 1 & 2. The cartridge cases submitted Items 3 & 5 were discharged in the same firearm. Items 3 & 4 will be submitted for inclusion in the open file (IBIS). If an identification is made, you will be notified.
VDFDA4	The cartridge case recovered from the bank (item 2) was identified to the test fired cartridge cases (item 1) and determined to have been fired in the suspect's handgun. The cartridge cases recovered from the bank (items 3 and 5) were identified to each other and determined to have [sic] fired in the same gun. The cartridge cases recovered from the bank (items 3, 4 and 5) were determined to be inconclusive to the test fired cartridge cases (item 1) and therefore can neither be identified nor eliminated as being fired in the suspect's handgun.
VEY8GJ	Using comparison microscope, inspection results are below: Item 3, 4, 5 are very different from item 1; false match of firing pin impression. But, Item 2 is the very same item 1; match of firing pin impression.
VJF9ZA	Visual and microscopic comparison of Items 1 through 5 revealed three separate firearms were used to fire the cartridge cases. Item 1 (known) and Item 2 were fired in the same firearm. Item 3 and Item 5 were fired in the same firearm as each other but not the same firearm as Item 1 and Item 2. Item 4 was fired in a third firearm.
VJFHJU	The individual marks of the firing pin impression on item 2 match the marks on item 1. Both items were fired from the incriminated firearm. Also the individual marks of the firing pin impression on items 3 and 5 match. The two items were fired from the same unknown firearm. No marks corresponding with items 1, 2, 3 or 5 could be found on item 4. It was fired from an unknown third firearm.
VNM3GY	Identification: Based on the comparison of breech face and/or firing pin markings of the fired cartridge case TC-1A(Item 1) with the fired cartridge case C-2(Item 2), the fired cartridge case C-2(Item 2) was identified as having been fired in the same firearm as the fired cartridge cases in Item 1. Identification: Based on the comparison of breech face and/or firing pin markings of the fired cartridge cases C-3(Item 3) with the fired cartridge case C-5(Item 5), the fired cartridge case C-3(Item 3) and C-5(Item 5) were identified as having been fired in the same firearm. Elimination: Based on differences in class and/or individual characteristics, the fired cartridge cases C-3(Item 3) and C-5(Item 5) were eliminated as having been fired in the same firearm as the fired cartridge cases in Item 1. Elimination: Based on differences in class and/or individual characteristics, the fired caliber cartridge cases C-3(Item 3) and C-5(Item 5) were eliminated as having been fired in the same firearm as the fired cartridge case C-4(Item 4). Elimination: Based on differences in class and/or individual characteristics, the fired caliber cartridge case C-4(Item 4) was eliminated as having been fired in the same firearm as the fired cartridge cases in Item 1.

TABLE 2

WebCode	Conclusions
VNPUJZ	The Item 1 and 2 Federal caliber 40 Smith & Wesson cartridge cases were identified as having been fired in the same firearm. The Item 3 and 5 Federal caliber 40 Smith & Wesson cartridge cases were identified as having been fired in the same firearm. Because of a difference in individual characteristics, Items 3 and 5 could not have been fired in the same firearm that fired Items 1 and 2. Because of a difference in individual characteristics, the Item 4 Federal caliber Smith & Wesson cartridge case could not have been fired in the same firearm that fired any of Items 1, 2, 3 or 5.
VPHLHZ	Ex #2 was fired in the firearm from Ex #1. Ex #3 and #5 were fired in the same firearm. Ex #4 could not be identified or eliminated as having been fired in the firearm from Ex #1 or the same firearm as Ex #3 and #5. Ex #3 and #5 could not be identified or eliminated as having been fired in the firearm from Ex #1.
VPKCL3	The cartridge case in Item 2 was fired in the same gun that fired the cartridge cases in Item 1. The cartridge cases in Items 3 through 5 bear some similarities in class characteristics with those observed on the cartridge cases in Item 1. However, the cartridge cases in Items 3 through 5 could not be positively included or excluded as having been fired in the same gun that fired the cartridge cases in Item 1. The cartridge cases in Items 3 and 5 were fired in the same gun.
VTEX8R	Item 1-1/ One (1) .40 caliber discharged cartridge casing, headstamp "Federal 40 S&W", test firing from the recovered weapon (.40 caliber S&W Springfield Armory XD40) referred to as CTS Item # 1. Item 1-2/ One (1) .40 caliber discharged cartridge casing, headstamp "Federal 40 S&W", test firing from the recovered weapon(.40 caliber S&W Springfield Armory XD40) referred to as CTS Item # 1. Item 1-3/ One (1) .40 caliber discharged cartridge casing, headstamp "Federal 40 S&W", test firing from the recovered weapon(.40 caliber S&W Springfield Armory XD40) referred to as CTS Item # 1. Item 1-4/ One .40 caliber discharged cartridge casing, headstamp "Federal 40 S&W" recovered at the scene, referred to as CTS Item #2. Item 1-5/ One .40 caliber discharged cartridge casing, headstamp "Federal 40 S&W" recovered at the scene, referred to as CTS Item # 3. Item 1-6/ One .40 caliber discharged cartridge casing, headstamp "Federal 40 S&W" recovered at the scene, referred to as CTS Item #4. Item 1-7/ One .40 caliber discharged cartridge casing, headstamp "Federal 40 S&W" recovered at the scene, referred to as CTS Item #5. As a result of physical and microscopic examination of the submitted evidence it is my opinion: A/ Item 1-4 was fired by the recovered weapon (.40 caliber S&W Springfield Armory XD40). B/ Item 1-5, and Item 1-7 were both fired by the same unknown weapon, a weapon capable of chambering and firing .40 caliber class ammunition. Item 1-5 and Item 1-7 were not fired by the recovered weapon (.40 caliber S&W Springfield Armory XD40). C/ Item 1-6 was fired by an unknown weapon capable of chambering and firing .40 caliber class ammunition. Item 1-6 was not fired by the recovered weapon (.40 caliber S&W Springfield Armory XD40).
WVAPMP	Item #2 was discharged from the suspect's weapon. Item #3 and Item #5 were discharged from one weapon, different from the suspect's weapon. Item #4 was not discharged from the suspect's weapon. Item #4 was not discharged from the weapon that discharged Item #3 and Item #5.
VZ4ME3	Item #2: The cartridge case was compared to the test-fired exemplars, sub-items 1A to 1C, obtained from the Springfield Armory, model XD40, caliber .40 Smith and Wesson handgun. Sufficient corresponding individual breech face and firing pin signatures were observed to conclude that the cartridge case was fired within the handgun. Item #3: The cartridge case was compared to the test-fired exemplars, sub-items 1A to 1C, obtained from the Springfield Armory, model XD40, caliber .40 Smith and Wesson handgun. Differences in the class and individual characteristics were observed to conclude that the cartridge case was not fired

TABLE 2

WebCode	Conclusions
	<p>within the handgun. Item #4: The cartridge case was compared to the test-fired exemplars, sub-items 1A to 1C, obtained from the Springfield Armory, model XD40, caliber .40 Smith and Wesson handgun. Differences in the class and individual characteristics were observed to conclude that the cartridge case was not fired within the handgun. The cartridge case was also compared to the cartridge case, Item #3. Differences in the class and individual characteristics were observed to conclude that the cartridge cases were fired within different firearms. Item #5: The cartridge case was compared to the test-fired exemplars, sub-items 1A to 1C, obtained from the Springfield Armory, model XD40, caliber .40 Smith and Wesson handgun. Differences in the class and individual characteristics were observed to conclude that the cartridge case was not fired within the handgun. The cartridge case was also compared to the cartridge case, Item #3. Sufficient corresponding individual chamber and firing pin signatures were observed to conclude that the cartridge cases were fired within the same firearm.</p>
W2UA4B	<p>Item #2 (one Federal 40 S&amp;W fired cartridge case) was examined on 05/25/2010. Item #2 was positively identified as having been fired in Item #1 (Springfield Armory model XD-40 pistol). Item #3 (one Federal 40 S&amp;W fired cartridge case) and Item #5 (one Federal 40 S&amp;W fired cartridge case) were examined on 05/25/2010. Items #3 &amp; #5 were positively identified as having been fired in the same firearm. No firearm was submitted. Item #4 (one Federal 40 S&amp;W fired cartridge case) was examined on 05/25/2010. Item #4 was eliminated as having been fired in Item #1 (Springfield Armory pistol). Item #4 was eliminated as having been fired in the same firearm as Items #3 and #5. No firearm was submitted.</p>
W42R27	<p>1. The 40 S&amp;W caliber cartridge case, item 2, was fired by the firearm that fired the cartridge cases in item 1 (represented to be test bullets from a suspect's Springfield Armory XD-40). 2. Items 3 and 5 were fired by a common 40 S&amp;W caliber pistol. Class characteristics of firing pin drag and the relative locations of the extractor and ejector marks are consistent with items 1, 2, and 4 but there is a lack of sufficient matching patterns of individual markings to be identified with items 1, 2, and 4. 3. Item 4 cannot be identified to items 1, 2, 3, and 5 for the reasons listed above. These tests are inconclusive.</p>
W4LU7E	<p>[No Conclusions Reported.]</p>
WA3ZCF	<p>The Springfield Armory pistol, specimen #1, was test fired using material from the laboratory collection. The reference fired cartridge cases obtained were compared to the .40 S&amp;W caliber fired cartridge cases, specimens #2 through #5. Further examination revealed the following: Specimen #2 was fired in the Springfield Armory pistol, Specimen #1. Specimens #3 and #5 were fired in a second weapon, but not in the Springfield Armory pistol, specimen #1. Specimen #4 was fired in a third weapon, but not in the Springfield Armory pistol, specimen #1.</p>
WDNQQQ	<p>Item 1 consists of three fired Federal brand 40S&amp;W cartridge cases. It was stated that these cartridge cases were test fired from a Springfield Armory brand 40 S&amp;W pistol, model XD40. Item 2 is a fired Federal brand 40 S&amp;W cartridge case. It was microscopically compared to Item 1. Item 2 was identified as having been fired by the same firearm that fired Item 1. Items 3 and 5 are two fired Federal brand 40 S&amp;W cartridge cases. They were microscopically compared to each other. Items 3 and 5 were identified as having been fired by the same firearm. They were microscopically compared to Item 1. Items 3 and 5 were eliminated as having been fired by the same firearm that fired Item 1. Item 4 is one fired Federal brand 40 S&amp;W cartridge case. It was microscopically compared to Items 1, 3 and 5. Item 4 was eliminated as having been fired by the same firearm that fired Item 1, and the firearm that fired Items 3 and 5.</p>

TABLE 2

WebCode	Conclusions
X4ECUG	Exhibits 2 through 5 consist of four (4) fired .40 S&W caliber cartridge cases bearing the Federal headstamp. Microscopic examinations were conducted between Exhibits 2 through 5 and the Exhibit 1 test cartridge cases. Exhibit 2 was determined to have agreement of all discernible class characteristics and a sufficient agreement of individual characteristics to identify it as having been fired in the same firearm as the Exhibit 1 test cartridge cases. Exhibits 3 and 5 were determined to have agreement of all discernible class characteristics and a sufficient agreement of individual characteristics to identify both as having been fired in the same firearm and not fired in Exhibit 1, due to a difference in both class and individual characteristics. Exhibit 4 was determined not to have been fired in the same firearm as the Exhibit 1 test cartridge cases and Exhibits 3 and 5, due to a difference in both class and individual characteristics.
X6K3GX	Ex. #2 was fired in the firearm that fired the DCC's in Ex #1. Ex. #3 and #5 were fired in the same firearm. Ex. #3 and #5 could not be identified or eliminated as being fired in the firearm that fired the DCC's in Ex. #1. Ex. #4 could not be identified or eliminated as being fired in the firearm that fired the DCC's in Ex. #1. Ex. #4 could not be identified or eliminated as being fired in the same firearm as Ex. #3 & #5.
XA46GF	Ex 2 was fired in the Ex 1 firearm. Ex 3 & 5 were fired in the same firearm. They were not fired in the Ex 1 firearm. Ex 4 was not fired in the Ex 1 firearm or in the same firearm as Ex 3 & 5.
XBAATX	Description: Items 1-1, 1-2, 1-3/ three submitted .40 s&w caliber discharged cartridge cases. Test fires from the recovered .40 s&w caliber Springfield Armory semi automatic pistol model XD-40 (CTS item 1). Item 1-4/ .40 s&w caliber discharged cartridge case head stamp "Federal" recovered at scene (CTS item 2). Item 1-5/ .40 s&w caliber discharged cartridge case head stamp "Federal" recovered at scene (CTS item 3). Item 1-6/ .40 s&w caliber discharged cartridge case head stamp "Federal" recovered at scene (CTS item 4). Item 1-7/ .40 s&w caliber discharged cartridge case head stamp "Federal" recovered at scene (CTS item 5). As a result of physical and microscopic examination of the recovered evidence, it is my opinion that: A/ item 1-4, .40 s&w caliber discharged cartridge case was fired from the recovered .40 s&w caliber Springfield Armory semi automatic pistol model XD-40. B/ items 1-5 and 1-7, .40 s&w caliber discharged cartridge cases were both fired from the same unknown weapon capable of chambering and firing .40 s&w caliber ammunition. Not the recovered .40 s&w Springfield Armory semi automatic pistol model XD-40. C/ item 1-6, .40 s&w caliber discharged cartridge case was fired from an unknown weapon capable of chambering and firing .40 s&w caliber ammunition. Not the recovered .40 s&w Springfield Armory semi automatic pistol model XD-40.
XEHU3Y	Item #2: The cartridge case was compared to the test-fired cartridge case exemplars, Item #1, obtained from a Springfield Armory, model XD40, caliber .40 Smith and Wesson firearm. Sufficient corresponding individual firing pin and chamber signatures were observed to conclude that the cartridge case was fired within the firearm. Item #3: The cartridge case was compared to the test-fired cartridge case exemplars, Item #1, obtained from a Springfield Armory, model XD40, caliber .40 Smith and Wesson firearm. Due to the differences in the class and individual characteristics, the pistol was eliminated as having fired the cartridge case. The cartridge case was also compared to Item #5. Sufficient corresponding individual breech face and firing pin signatures were observed to conclude that both cartridges were fired within the same firearm. Item #4: The cartridge case was compared to the test-fired cartridge case exemplars, Item #1, obtained from a Springfield Armory, model XD40, caliber .40 Smith and Wesson firearm. Due to the differences in the class and individual characteristics, the pistol was eliminated as having fired the cartridge case. The cartridge case was also compared to Items #3 and 5. Due to the differences in

TABLE 2

WebCode	Conclusions
	the class characteristics, the pistol that fired Items #3 and 5 was eliminated as having fired the cartridge case. Item #5: The cartridge case was compared to the test-fired cartridge case exemplars, Item #1, obtained from a Springfield Armory, model XD40, caliber .40 Smith and Wesson firearm. Due to the differences in the class and individual characteristics, the pistol was eliminated as having fired the cartridge case.
XF86UQ	The 9mm cartridge case (Item 2) was fired in the same firearm as the submitted cartridge cases in Item 1. The 9mm cartridge cases (Items 3 and 5) were fired in a second firearm. The 9mm cartridge case (Item 3[sic]) was fired in a third firearm.
XFTW83	Item 2 was identified as having been fired in the same firearm that fired the cartridge cases in Item 1. Item 3 was identified as having been fired in the same firearm that fired Item 5. Items 3 and 5 were excluded as having been fired in the same firearm that fired Items 1 and 2. Item 4 could neither be identified nor excluded as having been fired in the same firearm that fired Items 1 and 2. Item 4 could neither be identified nor excluded as having been fired in the same firearm that fired Items 3 and 5.
XHA36J	The cartridge case (item # F2) was fired in the same firearm as the cartridge cases in item # F1. The cartridge cases (items # F3 & F5) were fired in the same unknown firearm. However, they were not fired in the same firearm as the cartridge cases in item # F1. The cartridge case (item # F4) was not fired in the same firearm as any of the other submitted cartridge cases.
XLWL7G	Item 2 was positively identified as having been fired in the same firearm which fired item 1 (suspect's firearm).
XMR8Y9	Items 1 through 1.2 and Items 2 through 5 are .40 S&W caliber cartridge cases bearing the headstamp of Federal. Item 2 was identified as having been fired in the same firearm as the Item 1.1 cartridge case. Items 3 and 5 were identified as having been fired in the same firearm. Due to a difference in class characteristics, Item 3 and 5 were not fired in the same firearm as Items 1 through 1.2 and 2. Due to a difference in class characteristics, Item 4 was not fired in the same firearm as Items 1 through 1.2, Item 2 and Items 3 and 5.
XRBL98	Sufficient agreement of class and individual characteristics confirmed that the item 2 expended cartridge case was fired in the same firearm as the item 1 expended cartridge cases. Disagreements of characteristics confirmed the items 3, 4, and 5 expended cartridge cases were not fired in the same firearm as the item 1 expended cartridge cases.
XVM2HZ	Microscopic examination of Exhibit 1 (test-fired cartridge cases) and Exhibit 2 (cartridge case) disclosed they were fired in the same firearm. Microscopic examination of Exhibits 3, 4, and 5 (cartridge cases) disclosed that they were not fired in the same firearm as Exhibit 1 (test-fired cartridge cases). Microscopic examination of Exhibit 3 and 5 (cartridge cases) disclosed they were fired in the same firearm. Microscopic examination of Exhibit 4 (cartridge case) disclosed that it was not fired in the same firearm as Exhibits 3 and 5 (cartridge cases).
XWTJ4P	[No Conclusions Reported.]
XZTVYP	Item #2 was fired from the 40 S&W cal Springfield Armory XD40 pistol. Item #3 and 5 were fired from 1 gun not the 40 S&W cal Springfield Armory XD40 pistol. Item #4 was not fired from the Springfield Armory XD40 pistol or Item #3 & 5.
Y6E8BW	Item 2 was fired in the same firearm as Item 1. Items 3 & 5 were fired in the same firearm. Items 3 & 5 could not be identified or eliminated as having been fired in the same firearm as Item 1 and Item 4. Item 4 could not be identified or eliminated as having been fired in the same firearm as Item 1.

TABLE 2

WebCode	Conclusions
Y7XD4E	Item 2 had been fired by the same firearm as that used to discharge the test cases (Item 1). Items 3 and 5 had been fired by the same firearm, this being a different weapon to that which had discharged Items 1 and 2. Item 4 had been fired by a third weapon, different to both that which had fired 1 and 2, and that which had fired 3 and 5.
Y8QTCJ	The forensic laboratory, of the [Laboratory] section of physics (firearm laboratory) performed the investigations of the items (sent by CTS) and came to the following results: The forensic material consists of in total 7 cartridge cases (.40 S&W) with following description: Item 1: Three cartridge cases fired using the suspect's handgun (known). Items 2-5: Four cartridge cases recovered at the crime scene (questioned). Three of the cartridge cases (items 3, 4, 5) show matching coarse traces, they are caliber-identical. They don't show any individual matching detailed traces to item 1. The fired cartridge case item 2 shows correlating traces to the test-fired cartridge cases. In conclusion, the carried out investigations showed that cartridge case item 2 was fired from the seized firearm (item 1).
YBW9UN	The cartridge cases Exhibits 1 through 5 were compared microscopically with each other. Exhibits 1 and 2 were fired in the same firearm; Exhibits 3 and 5 were fired in a second firearm; and Exhibit 4 was fired in the third firearm.
YC27UH	The submitted cartridge case (Item 2) is identified as having been fired in the recovered pistol (Item 1). The submitted cartridge cases (Items 3, 4 & 5) were not fired in the recovered pistol (Item 1). The submitted cartridge cases (Items 3 & 5) are identified as having been fired in the same firearm.
YD3UJ9	I determined that Item 2 (fired .40 S&W cartridge case) was fired in the Springfield Armory pistol. I determined that Items 3 and 5 (fired .40 S&W cartridge cases) were not fired in the Springfield Armory pistol; however, they were fired in the same firearm. I determined that Item 4 (fired .40 S&W cartridge case) was not fired in the Springfield Armory pistol or in the firearm that fired Items 3 and 5.
YDXDAP	Examined the four specimens Marked #2 thru #5. They are .40 S&W Caliber discharged shells headstamped Federal. Compared test shells against the shell marked #2 with positive results. The shell marked #2 was discharged in the submitted pistol. Compared test shells against the three shells marked #3, #4 & #5 with negative results. The three shells marked #3, #4, & #5 were not discharged in the submitted pistol. Compared the two shells marked #3 and #5 against each other with positive results. The two shells marked #3 and #5 were discharged in the same firearm. Compared the shell marked #4 against the two shells marked #3 and #5 with negative results. The shell marked #4 and the two shells marked #3 and #5 were discharged in different firearms.
YEMAPP	1-1 Discharged Cartridge Casing(s) Expended cartridge case discharged from the suspect's weapon (known). 1-2 Discharged Cartridge Casing(s) Expended cartridge case discharged from the suspect's weapon (known). 1-3 Discharged Cartridge Casing(s) Expended cartridge case discharged from the suspect's weapon (known). The following were submitted as indicated: 1-4 Discharged Cartridge Casing(s) Expended cartridge case recovered from the bank (questioned). Submitted as item 2. 1-5 Discharged Cartridge Casing(s) Expended cartridge case recovered from the bank (questioned). Submitted as item 3. 1-6 Discharged Cartridge Casing(s) Expended cartridge case recovered from the bank (questioned). Submitted as item 4. 1-7 Discharged Cartridge Casing(s) Expended cartridge case recovered from the bank (questioned). Submitted as item 5. As a result of a physical and microscopic examination of the test specimens with the submitted evidence, it is my opinion: A/ The item 1-4 discharged cartridge case was fired by the Springfield Armory model XD40 pistol that fired the tests in items 1-1, 1-2, 1-3. B/ The items 1-5 and 1-7 discharged cartridge cases

TABLE 2

WebCode	Conclusions
	<p>were fired by the same unknown weapon but not the Springfield Armory model XD40 pistol that fired the tests in items 1-1, 1-2, 1-3. C/ The item 1-6 discharged cartridge case was not fired by the Springfield Armory model XD40 pistol that fired the test mentioned in items 1-1, 1-2, and 1-3.</p>
YEWFCZ	<p>Item 2 was fired in the .40 S&amp;W Springfield pistol, model XD40, that fired Item 1. Items 3 and 5 were fired in a second .40 S&amp;W pistol based on differences in individual characteristics. Item 4 was fired in a third .40 S&amp;W pistol based on differences in class characteristics.</p>
YG9NZX	<p>Item 2 was fired in the same firearm as the cartridge cases in Item 1. Item 3 and Item 5 were fired in the same firearm. Item 3 and Item 5 were not fired in the same firearm as Item 1 and Item 2. Item 4 could not be identified or eliminated as being fired in the same firearm as Item 1 and Item 2 or Item 3 and Item 5.</p>
YH3AUP	<p>Exhibit #2 was fired in Exhibit #1 (Springfield Armory, model XD40). Exhibits #3 and #5 were fired in the same unknown firearm. Exhibits #3 and #5 cannot be identified or eliminated as having been fired in the same firearm as Exhibits #2, #4, or the firearm in Exhibit #1. Exhibit #4 cannot be identified or eliminated as having been fired in the same firearm as Exhibit #2, or the firearm in Exhibit #1.</p>
YQWEMQ	<p>Item #2 was fired in the same firearm as Item #1. Item #3 and Item #5 were fired in the same firearm. Items #3 and #5 could not be identified or eliminated as being fired in the same firearm as Item #2. Item #4 could not be identified or eliminated as being fired in the same firearms as Items #3 and #5 or Item #2.</p>
YU6BP8	<p>The cartridge cases in Items #2, 3, 4, and 5 were microscopically examined in conjunction with one another and with the cartridge cases in Item #1. Based on these comparative examinations it was determined that: A. The cartridge cases in Items #1 and 2 had been fired in the same firearm. B. The cartridge cases in Items 3 and 5 had been fired in the same firearm. However no individual characteristics were found to link Items 3 and 5 as having been fired in the same firearm as the cartridge cases in Item 1. C. No individual characteristics were seen to link Item #4 as having been fired in the same firearm as cartridge cases in Items 1, 2, 3, and 5.</p>
YUNAPQ	<p>Microscopical examination revealed Item 2 was identified as being fired in the same firearm was[sic] Item 1. Furthermore, Items 3 and 5 were identified as being fired in the same firearm. Items 3, 4, and 5 were neither identified nor eliminated as being fired in the same firearm as Item 1 with a more definitive conclusion not possible because similarities in class characteristics were observed but dissimilarities in individual characteristics were also observed during the comparison of Items 3, 4, and 5 to Item 1. Item 4 could neither be identified nor eliminated as being fired in the same firearm as Items 3 and 5 with a more definitive conclusion not possible because similarities in class characteristics were observed but dissimilarities in individual characteristics were also observed during the comparison of Item 4 to Items 3 and 5.</p>
YVKTQR	<p>The cartridge case in item 2 was identified as having been fired in the same firearm that fired the cartridge cases in item 1. The cartridge cases in items 3, 4 and 5 could not be identified or excluded as having been fired in the firearm that fired the cartridge cases in item 1. Microscopic examination revealed that the cartridge cases in items 3, 4, and 5 did not exhibit sufficient individual characteristics for identification. Similar class characteristics indicate the cartridge cases in items 3, 4, and 5 could have been fired in the firearm that fired the cartridge cases in item 1 or in any other firearm having similar general rifling characteristics. The evidence cartridge cases in items 3 and 5 were identified as having been fired in the same firearm.</p>

TABLE 2

WebCode	Conclusions
YX8CRP	The fired cartridge case in Item #2 was fired in Item #1, the Springfield Armory firearm. The fired cartridge case in Item #3 and Item #5 were fired in a second unknown firearm. Items #3 and #5 were not fired in the firearm that fired Items #1, #2 and #4. The fired cartridge case in Item #4 was fired in a third unknown firearm. Item #4 was not fired in the same firearm that fired Items #1, #2, #3 or #5.
YYV47F	Microscopic examination and comparison of Items 1 and 2 revealed that there was agreement of combinations of individual and all discernible class characteristics. It is concluded that Item 2 was fired in the same firearm as Item 1, the test fired cartridge cases. Microscopic examination and comparison of Items 3 and 5 revealed that there was agreement of combinations of individual and all discernible class characteristics. It is concluded that Items 3 and 5 were fired in the same firearm. Microscopic examination and comparison of Item 4 to Items 1, 2, 3, and 5 revealed that there was agreement of all discernible class characteristics and no observed agreement of individual characteristics. Significant combinations of corresponding microscopic markings were not observed. Therefore, Item 4 was neither identified or eliminated as having been fired in the same firearms and[sic] Items 1, 2, 3, and 5. Microscopic examination and comparison of Items 3 and 5 to Items 1 and 2 revealed that there was agreement of all discernible class characteristics and no observed agreement of individual characteristics. Significant combinations of corresponding microscopic markings were not observed. Therefore, items 3 and 5 were neither identified or eliminated as having been fired in the same firearm as Items 1 and 2.
YZDUT7	One of the questioned cartridge cases (item 2) was fired in the same firearm as the known cartridge cases (item 1). Two of the questioned cartridge cases (items 3 and 5) were fired in the same firearm but were not fired in the same firearm as the known cartridge cases (item 1). One of the questioned cartridge cases (item 4) was not fired in the same firearm as any of the other cartridge cases (items 1, 2, 3, and 5).
YZQM8G	Microscopic examination and comparison of the cartridge cases, Item 1, with the cartridge case, Item 2, reveals that they were fired in the same firearm. Microscopic examination and comparison of the cartridge cases, Items 3 and 5, reveals that they were fired in the same firearm; however, the firearm that fired Items 3 and 5 is not the same firearm that fired Items 1 and 2. Microscopic examination and comparison of the cartridge case, Item 4, reveals that it was not fired in the same firearm that fired Items 1 and 2 or the firearm that fired Items 3 and 5.
Z2JKQA	Item 2 was fired in the same firearm as Item 1. Item 3 and Item 5 were fired in the same firearm. Items 3 and 5 were not fired in the same firearm as Item 1. Item 4 was not fired in the same firearm as Item 1. Item 4 was not fired in the same firearm as Items 3 and 5.
Z2ZTHP	The item 2 discharged cartridge case was fired in the same firearm that produced the Item 1 test-fires. The items 3 and 5 discharged cartridge cases were fired in a second firearm. Item 4 could not be identified or eliminated from having been fired in the same firearm as the Item 1 test fires or the firearm that fired items 3 and 5.
Z38C6Y	The cartridge[sic] cases labeled as item 2 and item 1 (known) were fired from the same firearm. The cartridge case labeled as item 4 was not fired from the suspect's firearm and was not fired from the firearm [sic] fired item 2, 3 and 5. The cartridge cases labeled as item 3 and 5 were fired from the same firearm.
Z43U8Z	The cartridges - items 2, 3, and 5 were found to be fired from the suspect's weapon, based on the comparative study of firing pin marks.

TABLE 2

WebCode	Conclusions
ZDTG9H	Item #2 is a caliber .40 S&W cartridge case, Federal brand, which was identified as having been fired in the Item #1 pistol. Items #3 and #5 are two (2) caliber .40 S&W cartridge cases, Federal brand, which were identified as having been fired in the same second firearm. Item #4 is a caliber .40 S&W cartridge case, Federal brand, which was fired in a third firearm.
ZE7DXP	Item #2 was identified as fired in Item #1 (T/F). Items #3, 4 and 5 can be eliminated as fired in item #1 (T/F). Items #3 and 5 were fired in the same firearm (not submitted). Item #4 is inconclusive as to being fired in a separate firearm from Items #3 and 5 due to a lack of marks and a firearm for comparative purposes.
ZEBPW7	According [sic] the observation done on the recovered pieces, the following conclusions could be formulated. The samples show no significant difference of class characteristics. The comparison of individual characteristics between Item 1 and Item 2 shows sufficient agreement to conclude that Item 2 has been fired by the suspect's weapon. Item 3, 4 and 5 were not able to be excluded on the bases of class characteristics, but these cartridge cases have been fired from another firearms[sic] than the suspect's weapon. The comparison of individual characteristics between Item 3 and Item 5 shows sufficient agreement to conclude that these samples have been fired by the same firearms[sic].
ZGAL47	QC-1 (Item #2) bears markings consistent with having been fired in the same firearm as the sample test fired casings submitted as (Item #1). QC-2 and QC-4 (Items #3 and #5) bear markings consistent with having been fired in the same firearm, firearm unknown. It can not be positively concluded that all of the submitted standards were not fired in the same firearm at this time.
ZMVTBD	Item 2 was fired in the same firearm as the item 1 fired cartridge cases. Items 3 and 5 were not fired in the same firearm as the item 1 fired cartridge cases. Items 3 and 5 were fired in the same firearm. Item 4 bears insufficient microscopic marks to permit identification when compared against other items submitted, but bears more consistent marks with the items 1 and 2 fired cartridge cases than the items 3 and 5.

# Additional Comments

TABLE 3

WebCode	Additional Comments
28K9N8	Items 3 and 5: The level of disagreement in the individual detail that suggests items 3 and 5 were not fired from the suspect's firearm, but there was not enough to eliminate. Without having the weapon to examine, extra caution must be taken before eliminating an expended ammunition component. Item 4: There were several areas of agreement for item 4. However, there was insufficient quantity and quality of individual detail for an identification. There are some indications that item 4 was fired from the same firearm that was used to fire the cartridge cases from item 1. If I had the pistol to examine and to obtain more test-fires, I could do further work.
2DATQM	Perhaps would have eliminated Item #4 from Items #1, #3, and #5 had there been more than one cartridge case associated with Item #4.
2FDTJ8	An inconclusive opinion was reported for a comparison on Item 1 with Items 3 through 5 because the identification criteria was not met and the class characteristics were similar.
2LXAZJ	The expended cartridge case, Exhibit 4, does not contain sufficient accidental characteristics to identify or eliminate it as having been fired from the same firearm as Exhibit 1.
2MWRF8	Markings present on the Item 4 cartridge case indicate that it may have been fired in a third firearm, however, due to it being a single Item and the similarity of class characteristics to the other cartridge cases, that could not be determined.
2YBTVD	The characteristic marks on the recovered casings Item 3 and Item 5 to match each other. Hence, I am of the opinion that they were both fired from the same firearm but not from the .40 S&W Springfield Armory XD 40 handgun.
38HZWY	Although the pattern of individual characteristics (breachface marks, firing pin impression, and ejector mark) displayed by Item 4 is different than the patterns observed on the other cartridge cases, because it is a single example (with no way to substantiate reproduction of the pattern from item to item) it cannot in good scientific practice be eliminated.
3ARVW6	Item 4 may be from a different firearm given the shape of the ejector and the lack of an ejection port mark that is present on the other groups. However, because the class characteristics are otherwise so similar to the other groups, it can not be excluded.
3JPZHQ	All of the cartridge cases have similar class of breachface marks on the primers, as well as firing pin impressions, while there is not much agreement of individual characteristics on the cartridge cases marked "inconclusive", I would not eliminate them based on that, especially without a firearm. If there were different class of breachface marks (concentric circles, etc.) I would eliminate them.
3PEDJE	Insufficient: Because in this case, there were some (not many) areas of agreement and could not be totally ruled out.
3VLVPU	#3, 4 & 5 were inconclusive to #1 due to the lack of individual characteristics. All the breach face marks were parallel and the firing pin impressions were hemispherical along with the granular pattern inside the firing pin impression.
3WHENF	The ctg cases in 3, 4, & 5 were not excluded due to similarity of class characteristics. Need other suspect firearms for further analysis.
43Z8CJ	Q-3 was observed to have the same class characteristics (caliber, hemispherical firing pin shape and parallel linear breach face detail); however, there was insufficient microscopic detail to determine if Q-3 was or was not fired in the same pistol as T-1, T-2 and T-3. Q-3 was compared to Q-2 and Q-4. The cartridge cases were observed to have the same class

TABLE 3

WebCode	Additional Comments
	characteristics (caliber, hemispherical firing pin shape and parallel linear breech face detail); however, the microscopic breech face and FPJ detail was sufficiently different to determine that Q-3 was not fired in the same firearm as Q-2 and Q-4. T-1, T-2 and T-3 = Your Item # 1. Q-1 = Your Item # 2; Q-2 = Your Item # 3; Q-3 = Your Item # 4; Q-4 = Your Item # 5.
4FM9ZD	3 weapons have been utilised during this incident. One weapon has fired cases 1 & 2. One weapon has fired cases 3 & 5. The third weapon has fired case 4.
4LD6V2	The identification between Item #2 and Item #1 (test dccc) was made using random irregularities from the firing pin in the primer. The cross-identification between Items #3 and #5 was made using random irregularities from the firing pin in the primers. It appears Items #3 and #5 were fired in a different firearm than Items #1, #2, or #4. A positive elimination may be possible if the firing pin from the seized gun can be examined. Until the firing pin is examined this is an Inconclusive C per AFTE. (Agreement of all discernable class characteristics and disagreement of individual characteristics, but insufficient for an elimination). It appears Item #4 was fired in a different firearm than Items #1, #2, #3, or #5. A positive elimination may be possible if the firing pin from the seized gun can be examined. Until the firing pin is examined this is an Inconclusive C per AFTE. (Agreement of all discernable class characteristics and disagreement of individual characteristics, but insufficient for an elimination).
4LQEDV	Two guns other than the one represented by the Item 1 tests are involved.
4TBBJ7	Differences noted between Item 1 and Items 3, 4 and 5 were insufficient for elimination in the absence of the suspect firearms. If suspect weapons were submitted, elimination may be possible.
4TWUE6	* Had a firearm or multiple cartridge cases representing Item 4 been received to confirm reproducibility of individual characteristics, an elimination MAY have been possible.
6CJKP4	Item 4 lacked the detail for further conclusion.
6KUDR4	There is some agreement of class characteristics but differences in individual characteristics, but not enough to conclusively prove that it had not been fired in the pistol, Item 1. (Result Inconclusive)
6P9W9L	Our agency does not typically eliminate items based solely on individual characteristics without having the firearm.
6YBGPF	Item 4 - (expended cartridge case) did not contain sufficient identifiable accidental characteristics for an identification to be made.
77BWTY	Consistency can be established between Item 2 and all three cartridge cases of Item 1. Consistency can be established between Item 3 and Item 5. Consistency cannot be established for Item 4 because Item 4 is not identified to any other items. Individual markings on Item 4 are not sufficient for identification or elimination to any of the other items recovered in this case.
7QL8U3	Item 4 - inconclusive: all cartridge cases possessed similar class. All had parallel markings in the firing pin drag. All except Item 4 had sufficient parallel markings on the breechface. The chamber on Item 4 did not mark up as well as the other cartridge cases. Without a firearm, it is difficult to call Item 4 either a[ <i>sic</i> ] identification or exclusion.
7TMVB7	Items 1, 3 and 4 were submitted for NIBIN entry.
7ZY68E	The fired cartridge case, Item 4, exhibits similar class characteristics as those displayed on fired cartridge cases from Items 1, 2, 3 and 5. However, due to a lack of matching individual

TABLE 3

WebCode	Additional Comments
	detail, the fired cartridge case, Item 4, could neither be identified, nor eliminated as having been fired in the same firearm as Items 1 and 2 or the same firearm as Items 3 and 5. The results of these examinations are inconclusive.
83N2LE	The cartridge cases (Item 3, 5) were fired from the same firearm and have no connection with the suspect's weapon (Item 1).
87QFDW	Item 4 exhibits similar class characteristics as those present on the Item 1, 2, 3, and 5 cartridge cases; however, due to the lack of sufficient corresponding microscopic markings, it was not possible to identify or eliminate Item 4 as having been fired in the same firearm as the Item 1 and 2 cartridge cases or the Item 3 and 5 cartridge cases.
8MFLPV	All of the cartridge cases displayed the same overall BF characteristics (fine, parallel lines) so the 2 groups (1 & 2 and 3 & 5) could not be eliminated or ID to each other or to the item 4 cartridge case.
8NDDFU	This was a fairly straightforward test.
8TF2YC	This is my report language as well as why I called it inconclusive. Microscopic comparisons of the evidence cartridge case, submitted as item #4, with test cartridge cases, submitted as item #1, revealed some matching individual breechface characteristics and firing pin impressions. These findings indicate that the evidence cartridge case could have been fired in the Springfield Armory pistol; however, there were insufficient matching individual characteristics for the purposes of positive identification.
93DGTV	While I strongly suspect that there were a total of three firearms represented in the evidence (Items 1 & 2, Items 3 & 5, and Item 4 being the three groups), there were not a significant enough difference in the individual details to support an elimination of Items 3, 4, or 5. All five items had identical class characteristics and similar individual features. While the differences in fine features were enough to prevent an identification, they were not enough to prove an elimination. If a similar situation presented in casework, I would issue a written report with the conclusion of inconclusive, but would also express these additional comments to my investigators verbally.
96V8NC	The cartridge case in item 3 was identified as having been fired in the same firearm as the cartridge case in item 5. The cartridge case in item 4 could not be identified as having been fired in the same firearm as the cartridge cases in items 3 and 5. Microscopic examination revealed that the cartridge case in item 4 did not exhibit sufficient agreement of individual characteristics for identification to the cartridge cases in items 3 and 5. Similar class characteristics indicate the cartridge case in item 4 could have been fired in the same firearm as the cartridge cases in items 3 and 5, or in any other firearm having similar general rifling characteristics.
9EGY4V	4 inconclusive 1. Class similarities with not enough microscopic differences to identify or exclude.
9Q942N	The class characteristics of the known and questioned samples are similar. The similarities in the individual patterns on the inconclusive items are such that they preclude a finding of elimination to the known item(s).
9WYF3C	Due to poor registration, item #4 failed to reveal sufficient individual characteristics for the purposes of positive identification.
9XUZ2W	Some matching impressions seen along with a somewhat similar ejector mark. Discernible class present. Nothing seen that would lead me to eliminate but insufficient agreement for an identification.
AYHZBD	Items 3, 4 and 5 were not identified or eliminated as having been fired in the same firearm as

TABLE 3

WebCode	Additional Comments
	the known test shots (Items 1A, 1B, 1C) reportedly from a .40 S&W caliber, Springfield Armory, XD40 model, semiautomatic pistol. Reason for inconclusive findings: Class characteristic agreement, but insufficient agreement between individual characteristics.
AZDAUV	I observed similar class characteristics, but no significant correspondence of individualizing characteristics on Items 3 and 5. Items 3 and 5 were fired from a single gun. That gun may or may not have been the suspect's gun.
B7V9CE	The slight observable difference in the firing pin impression size of Item 4 is not sufficient enough to serve as a basis for elimination. As a result, and given the shared similarities of class characteristics of Items 1, 2, 3, 4 and 5, eliminating Item 4 as having been fired in the same firearm as 1 and 2 or 3 and 5 would be based solely on differences in the individual characteristics observed and that is not an acceptable practice for this laboratory.
BDK7JV	Item 4 could not be identified to any of the fired cartridge cases received with items 1, 2, 3, or 5. Though class characteristics were generally consistent, significant differences of individual characteristics were observed throughout. However, since it cannot be determined if the individual characteristics observed on item 4 are consistent and reproducible, item 4 could not be excluded as having been fired by those firearms that fired items 1 and 2 or items 3 and 5. All such comparisons were inconclusive.
BZWHCX	The Items 3, 4 and 5 were inconclusive due to insufficient microscopic characteristics. All of the cartridge cases exhibited the same class characteristics with very faint microscopic characteristics, therefore, an exclusion was not possible.
C9E6GD	It is possible that items 2, 3 & 5 were also fired in the same make/model of pistol as that recovered from the suspect. However in the absence of fired bullets it is not possible for me to confirm this.
CJZRNE	Items 3 and 5 were fired in the same firearm but not the same firearm as Items 1 and 2. Item 4 was not fired in either of the firearms in which Items 1 and 2 nor Items 3 and 5 were fired.
CP7F88	Microscopic examination and comparison of discharged cartridge case (Item #4) with tests failed to reveal sufficient matching impression patterns for a positive identification. However this does not preclude a possible identification to a common source firearm upon submission and testing of a suspect weapon.
CQK6BK	Insufficient matching individual striae.
CU6PKV	Photographs taken during examination are being retained on a compact disc in the case file.
CZ7AHJ	There was damage present to the primer area of the Item 4 cartridge case. Since there was only one cartridge case like this, it was not known if the damage was actually marks imparted by the firearm during the firing process or if it was caused by something else. This damage could also be obscuring individual characteristics which would have been transferred from the firearm. In addition, this cartridge case exhibits similar class characteristics and some individual characteristics, but there are insufficient reproducible individual characteristics to effect an identification or elimination.
CZG6Q6	Item #4, though having similar class characteristics, lacked sufficient individual characteristics to ID or eliminate as having been fired in the same firearm as #2, or Tests #1 (a-c). Items 3 and 5, though ID to one another, exhibit similar class characteristics as the tests, could not be eliminated as having been fired in the same firearm as #2.
CZPBLT	Items 1 and 4 contain similar class characteristics on the breech and firing pin. There were some differences in the extractor and ejector of Item 1 and 4. However, without a firearm to further evaluate the reproducibility of this particular mark there was insufficient microscopic detail to come to a conclusion.

TABLE 3

WebCode	Additional Comments
D3PJXB	Item 4 has similar class firing pin shape and drag as Item 1, however, there was insufficient matching microscopic marks for a conclusive comparison. Item 4 does not appear to match Item 1. One of the "standards" from Item 1 appeared to have a second set of extractor marks that were dissimilar to the extractor marks on the other "standards" from Item 1, indicating that the cartridge had been cycled through another firearm before or after discharge.
DBLBJC	No identification or elimination of Exhibit #4 due to class characteristic similarities. While there are individual characteristic differences, there is only one cartridge case so there is no way to verify what is reproducing.
DGBZV9	It 4 could neither be identified nor eliminated as having been fired from the same firearm as it 1 (stb Tf's) & it 2. Saw agreement on all discernible class char. & saw some possible agreement of individual char. (on BFM, FPI, & FP drag), but insufficient for an identification. Items 4, 1, & 2 have fine BFM striae. Extractor marks similar in overall appearance/shape. It 4 ejector mark appears more square. No obvious similarities on chamber/ing marks. **Need firearm for testing**
DYDWRR	Items 1, 2, 3, 4, and 5 all possessed similar class characteristics (parallel breechface, hemispherical firing pin with granular micro defects). Item 4 exhibited damage to primer surface. Microscopic similarities were observed between all items.
E6947C	If this were a real case, the cartridge case Exhibit 4 could easily be seen as inconclusive. It was not well marked and thus could easily be seen as an outlier. An elimination on a cartridge case that has faint markings should not be seen in a prof. test!
EGNPYL	The differences observed between the test fires (Item 1) and Items 3 through 5 were only individual characteristics. There was not a sufficient difference in class characteristics present to warrant an elimination.
F8KCEH	When I compared the cycle-of-fire marks on the questioned cartridge case, Item 2, to those on the known cartridge cases, Item 1, I observed agreement of class characteristics. In addition, I observed sufficient agreement of individualistic characteristics to conclude that this questioned cartridge case, Item 2, was fired in the same firearm as the known cartridge cases, Item 1. When I compared the cycle-of-fire marks on the known cartridge cases, Item 1, to those on the other questioned cartridge cases, Items 3, 4, and 5, no significant agreement of individualistic characteristics was observed. As a result, I concluded that these questioned cartridge cases were likely not fired in the same firearm as the known cartridge cases, Item 1. However, because there was no obvious discrepancy in the cycle-of-fire mark class characteristics, I was not able to exclude the known pistol as having fired these questioned cartridge cases. It may be possible to exclude the known pistol as having fired Items 3, 4, and 5 if I had the benefit of examining the pistol directly.
FEAXP3	Not having the firearm available for additional test fires negates rendering a conclusive opinion on items #3, #4 and #5.
G2N8YH	Would like to examine firearm before making a decision regarding Item 4.
G63AZB	In actual case work would have probably gone Inconclusive w/ex. 4 in relation to other exhibits. If ex. 4 had been marked a little better or if I had more cart. cases in exhibits 1, 2, 3 and/or 5 to ensure reproducibility of marks I would have been comfortable w/ eliminating ex. 4 from the rest.
G7VDDJ	I saw no corroborating patterns of reproducible striae between the inconclusive cartridge cases and the test fires. Our Firearms SOP however does not allow for eliminations when the same class characteristics are present (as they were in this case).
GCXKMR	Item 3 and 5 are in all probability fired in the same firearm.

TABLE 3

WebCode	Additional Comments
GPKU8C	Per laboratory policy, the identifications and eliminations in this test would have been verified by another examiner.
H9LWZ3	Based on agreement of class and individual characteristics items 3 & 5 were fired in the same unknown firearm. Based on disagreement of individual characteristics items 3 & 5 were not fired in the same unknown firearm as item 4.
HJ3P64	Item - 4 lacked any matching characteristics, however, without personally examining the recovered firearm, I am unable to determine if Item - 4 can be eliminated as having been fired in the same firearm as Item - 1. Item - 4 = Inconclusive.
K3XP6T	Items 3, 4 & 5 were neither identified nor eliminate[sic] since they share class with Item 1, however differences in accidental characteristics could not be accounted for; agreement was insufficient for an identification.
K78ZH3	Item 4 has similar class characteristics and possible sub-class characteristics to Items 1, 2, 3 and 5 but lacks sufficient individual characteristics for identification or elimination to either group (Items 1 & 2 or Items 3 & 5). Any firearms recovered during the course of this investigation should be submitted for comparison purposes.
KFBBPR	The questioned cartridge cases marked "Item 3" and "Item 5" could have been fired from the same firearm. Control cartridge cases are required to confirm this finding.
KPQBUZ	The fired 40 Smith & Wesson caliber cartridge case, Item 4, exhibits similar class characteristics as those displayed on the fired 40 Smith & Wesson caliber cartridge cases, Items 1, 2, 3, and 5. However, due to the lack of matching individual detail, Item 4 could neither be identified, nor eliminated as having been fired in the same firearm as Items 1 and 2 or in the same firearm as Items 3 and 5.
KY64J3	Reason for Inconclusives, differences not significant enough to eliminate and similarities not enough to identify.
L3DKEK	The "inconclusive" results (see paragraphs 3, 4, and 5 above) are due to observations of no basic class differences and no correspondence of individual characteristics. These observations do not constitute a sufficient basis for a result of absolute exclusion. It is possible that, with a physical examination of the recovered pistol, a conclusion of "exclusion" could be reached.
MH48Z3	I do not typically eliminate based on individual characteristics without having the firearm to examine.
MU4724	Specimen #2 was discharged in submitted pistol. Specimens #3 and #5 were discharged in a second firearm. Specimen #4 was discharged in a third firearm.
MXGF27	Inconclusive items had the same class characteristics and not enough difference of individual characteristics so therefore could not be identified or eliminated.
NKGJLJ	The three groups of cartridge cases (Items 1 and 2; Items 3 and 5; and Item 4) were not eliminated as having been fired in the same firearm due to insufficient disagreement of individual characteristics.
NT6ZWZ	Based on the observed similarities in the individual characteristics of T2 and T4 it appears likely that they were discharged from the same handgun. T3 appears to have been discharged from a different firearm.
NWBC43	At least 3 (three) separate firearms were used to fire all of the cartridge cases submitted in Items 2, 3, 4 and 5.
PH3ZW2	Exhibit 4 was sparsely marked. In areas where differences existed between Exhibits 1 and 2

TABLE 3

WebCode	Additional Comments
	and Exhibit 4 (firing pin impression, for example), there were variations within the "test fires". No correspondence of individual characteristics was noted in any area. Meaningful differences were noted, especially in chamber marks, but those differences did not rise to the level needed for an elimination.
PN8UYA	Due to insufficient marks of quality and quantity on Item 3, Item 4, and Item 5 we were unable to identify or eliminate the items as having been fired in the same firearm as Item 1. It is our opinion that Item 3 and Item 5 were fired in the same firearm.
PUX4A9	The cartridge cases in Submission 3 & 5 were fired in the same gun.
Q74G2T	Items #3 and #5 were discharged in the same firearm.
QY6YMG	Items 3 and 5 were fired from the same weapon based upon agreement of class and individualizing characteristics.
RPAGJR	Provided test fires were of marginal to poor quality. Firing pin drag did not reproduce well. Breech face marks did not reproduce well and ejector marks were obscured by the headstamp. One of the test fired cartridge cases displayed coarse lines which were diagonal to the parallel breech face marks and these marks did not reproduce on either of the other two submitted test fires. These lines were also visible in the firing pin impression and obscured some of the features in that impression. If this had been actual case work I would have requested additional test fires using a variety of ammunition.
RVF2GW	#4 is inconclusive because there is not enough individual detail to eliminate it or identify it to Exhibit #1 or the firearm that fired Ex #3 & #5. Also there is only one & it has all the same class characteristics as the other cartridge cases.
T8RQ9Y	The class breechface markings on Items 1 and 4 in contrast to Items 3 and 5 are similar overall except for a few gross markings on Items 3 and 5, but the individual breechface markings appear to orient (run) slightly different. The inconclusive finding of Items 1 and 4 is based on a lack of individual detail.
TFZHZG	*the group characteristics on the cartridge case item 4 are the same as those on the three cartridge cases item 1. There are not enough differences between the "individual" marks to make a save[sic] exclusion (in a real case we would do some extra test firing so we maybe could get to a conclusion).
TP873F	See Group III above. Additionally, Item 4 has similar class characteristics[sic] as Group I & II.
U2DJVZ	Our agency does not eliminate based on individual characteristics, only class characteristics. Eliminating based on individual characteristics would not take into account a firearm that had been altered after the fact.
U6KR9Q	All submitted Items are numbered (scribed) on the inside of the cartridge case mouth with the appropriate Item number e.g. "1", "2", "3" ... corresponding to Item labels on the inside packaging they were removed from, however the Item 4 expanded cartridge case appears to be not marked anywhere.
UBNKGZ	Items 3, 4 and 5 shared similar class characteristics as Item 1 but lacked sufficient matching individual characteristics, for a positive identification. Since they shared similar class characteristics as Item 1 they could not be eliminated. Results were Inconclusive.
UDXLL8	Differences in the shape of the ejector marks, patterns on the primers and in the firing pin impressions, the striations and size of the ejection port marks and chamber marks (i.e. individual characteristics) were noted between items 3, 4, and 5 when they were compared to the known test fired cartridge cases (item 1). However, due to similarities of the class characteristics among these cartridge cases, elimination was not possible.

TABLE 3

WebCode	Additional Comments
UT3B3D	Regarding the inconclusive conclusion of comparison of item 4 to items 3 and 5. AFTE and SWGGUN range of conclusions for inconclusive: Agreement of all discernible class characteristics and disagreement of individual characteristics, but insufficient for an elimination.
UT7JNJ	The word Exhibit was used interchangeably with Item above. The class characteristics of the extractor(s) is different in shape b/t - Ex #1 (1a, 1b, 1c), Ex 2; Ex's #3 & #5; Ex #4 - groups. Ex's #3 & #5 display slightly more gross parallel lines in the BFM than Ex's #1 (1a, 1b, 1c), #2 and #4. Fine parallel lines; however are also found in #3 & #5. Differences b/t #3 & #5 and Ex #1 are primarily individual in nature.
V6AGVQ	The fired 40 Smith and Wesson caliber cartridge case, Item 4, exhibits similar class characteristics as those displayed on the four fired 40 Smith and Wesson caliber cartridge cases from Items 1 and 2. However, due to the lack of matching individual detail, Item 4 could neither be identified nor eliminated as having been fired in the same firearm as Items 1 and 2. The results of these examinations are inconclusive.
VCUKWR	Conclusions are based on the assumption that all of the cartridge cases were discharged at the time of the incident. Given that the crime scene is a bank, this assumption seems reasonable as you wouldn't expect extraneous discharged cartridge cases to be laying around in a bank.
VDFDA4	Generally, I do not exclude evidence bullets and cartridge cases based on individual characteristics without access to the firearm in question.
VPHLHZ	Inconclusive statement: Class characteristics were the same and could not identify or eliminate based on individual characteristics[sic].
VPKCL3	Compared known test fires in Item 1 to Items 2-5: Used cartridge case marked 1O to identify Item 2 as being fired in the same gun: topographical info in firing pin impression, stria in firing pin drag, fine parallel marks and topographical marks on primer, also short and medium stria on chamber signature in short columns. Item 4 has some parallel marks that are not pronounced, some topographical info in firing pin impression, but chamber signature has different stria; heavy, medium length stria over entire surface of casing. Items 3 and 5 were fired in the same gun: topographical info in firing pin impression, stria in firing pin drag, some parallel on primer but different spacing than knowns in Item 1 and chamber signature was different than Item 1 (Item 3 and 5 have numerous very short stria on majority of casing, Item 1 has limited stria in columns). Ejector marks on Items 1 and 2 are similar, ejector marks on Items 3 and 5 are similar (different from Item 1 and 2); ejector mark on Item 4 is different than Items 1-3 and 5.
W42R27	Items 3, 4, and 5, were reported inconclusive compared to items 1 and 2 based on the lack of observable overwhelming differences which could not be explained as accidental markings.
X6K3GX	Ex. #3, #4, & #5 were all inconclusive to #1 based on their similar class characteristics and the lack of overwhelming and unexplainable differences in their individual characteristics.
XA46GF	If this had not been a proficiency test, Ex 1B, 3, & 4 may have been imaged into the NIBIN database.
XFTW83	Item 2 was identified as having been fired in the same firearm that fired Item 1 based on sufficient agreement of individual characteristics on firing pin impressions. Item 3 was identified as having been fired in the same firearm that fired Item 5 based on sufficient agreement of individual characteristics on firing pin impressions. Items 3 and 5 were excluded as having been fired in the same firearm that fired Items 1 and 2 based upon sufficient disagreement of individual characteristics on firing pin impressions/breechface impressions/ejector marks. Item 4 could neither be identified nor excluded as having been

TABLE 3

WebCode	Additional Comments
	fired in the same firearm as Items 1 and 2 or 3 and 5. There was some disagreement of individual characteristics but this disagreement was not sufficient for an exclusion. (It is difficult to determine the amount of disagreement of individual characteristics due to there being only one cartridge case = inability to ascertain what are reproducible individual characteristics).
XLWL7G	Items 3 and 5 were fired in the same firearm. Items 3 and 5 were not fired in the suspect's firearm.
Y6E8BW	Items 3, 4, & 5 have similar class characteristics to Item 1, and individual characteristics are not exceptionally different.
YDXDAP	Shell #2 in recovered pistol. Shells #3 and #5 same firearm, but not submitted pistol. Shell #4 discharged in third firearm, not submitted pistol, or firearm that was used to Discharge #3 and #5.
YH3AUP	Items 3, 4, and 5 are inconclusive to having been fired in the Item #1 due to the agreement of the class characteristics, but a lack of agreement of the individual characteristics due to absence, insufficiency, or lack of reproducibility of the pattern.
YQWEMQ	No eliminations could be made between Items #1 through #5 due to the similarities of the class characteristics of the firing pin impressions (Hemispherical) and breechface marks (P, G or G, P). Comparisons made were: Item #2 -> Item #1 (Identification); Items #3, #4 and #5 (Inconclusive); Item #3 -> Item #1 (Inconclusive); Item #4 (Inconclusive); Item #5 (Identification); Item #4 -> Item # 1, Item #5 (Both Inconclusive); Item #5 -> Item #1 (Inconclusive). Inconclusive results are based on insufficient reproductions of class and individual characteristics, which do not allow for an identification or elimination to be made.
YUNAPQ	Based on the comparison results reported above, the submitting agency would be advised of the potential that three different guns, only one of which was recovered, were fired at the crime scene.
YYV47F	For the inconclusive results: no significant patterns of agreement of individual characteristics were observed, and although pattern differences were noted, all the cartridge cases exhibited similar microscopic features such as parallel breech face marks and granular, hemispherical firing pin impressions. Laboratory policy discourages eliminating on differences in individual characteristics only, although there is indication that 3 firearms may have been used.
Z2ZTHP	Item 4 shows both agreement & disagreement with items (1 & 2) and (3 & 5). Without another cartridge case with markings similar to item 4, it is unclear whether the agreement or disagreement (especially) is reproducible.
ZGAL47	The class characteristics are consistent on all of the submitted standards, precluding an absolute exclusion to one firearm in common.
ZMVTBD	Item 4 bears insufficient microscopic marks to permit identification when compared against other submitted items.

# Appendix

Collaborative Testing Services ~ Forensic Testing Program

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## **Test No. 10-526: Firearms Examination**

DATA MUST BE RECEIVED BY July 06, 2010 TO BE INCLUDED IN THE REPORT

Participant Code:

WebCode:

### **Accreditation Release Statement**

CTS submits external proficiency test data directly to ASCLD/LAB and FQS-International. 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 and/or FQS-International. (Accreditation Release section on the last page must be completed and submitted.)
- This participant's data is **NOT** intended for submission to ASCLD/LAB or FQS-International.

#### Scenario:

Police are investigating an armed robbery of a bank involving four suspects. Each suspect was in possession of a firearm according to witnesses, but it is unknown which suspect(s) fired during the incident. Investigators recovered four cartridge cases from the bank floor. One suspect was apprehended fleeing the scene and police seized a 40 S&W Springfield Armory XD40 handgun from her. Three rounds of Federal American Eagle® .40 caliber ammunition (which were consistent with the cartridge cases found at the scene) were fired from the recovered gun and the cartridge cases collected. Investigators are asking you to compare the recovered cartridge cases from the scene with those expended from the suspect's weapon and report your findings.

*Please note each item is in a labeled jewel 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 CTS item number inside the open end of the cartridge case.*

**To be consistent with other Collaborative Testing Services tests, the known cartridges are now labeled as Item 1.**

#### Items Submitted (Sample Pack F1):

Item 1: Three expended cartridge cases discharged from the suspect's weapon (known).

Items 2-5: Four expended cartridge cases recovered from the bank (questioned).

1.) Were any of the questioned expended cartridge cases (Items 2-5) discharged from the same firearm as the known expended cartridge cases (Item 1)?

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

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

**Please return all pages of this data sheet.**

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## RELEASE OF DATA TO ACCREDITATION BODIES

The following Accreditation Releases will apply only to:

Participant Code:

WebCode:

for Test No. **10-526: Firearms Examination**

This release page must be completed and received by **July 6, 2010** to have this participant's submitted data included in the reports forwarded to the respective Accreditation Bodies.

### **ASCLD/LAB RELEASE**

If your lab has been accredited by ASCLD/LAB and you are submitting this data as part of their external proficiency test requirements, have the laboratory's designated individual complete the following.

**The information below must be completed in its entirety for the results to be submitted to ASCLD/LAB.**

ASCLD/LAB Legacy Certificate No. \_\_\_\_\_ ASCLD/LAB International Certificate No. \_\_\_\_\_

Signature \_\_\_\_\_ Date \_\_\_\_\_

Laboratory Name \_\_\_\_\_

Location (City/State) \_\_\_\_\_

### **FQS-INTERNATIONAL RELEASE**

If your laboratory maintains its accreditation through FQS-International, please complete the following form in its entirety to have your results forwarded.

FQS-International Certificate No. \_\_\_\_\_

Signature and Title: \_\_\_\_\_ Date \_\_\_\_\_

Laboratory Name \_\_\_\_\_

Location (City/State) \_\_\_\_\_

### Accreditation Release

#### **Return Instructions**

*Please submit the completed Accreditation Release at the same time as your full data sheet. See Data Sheet Return Instructions on the previous page.*

*Questions? Contact us 8 am-4:30 pm EST  
Telephone: +1-571-434-1925  
email: [forensics@cts-interlab.com](mailto:forensics@cts-interlab.com)*

**Please return all pages of this data sheet.**

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