



## **Firearms Examination**

# **Test No. 24-5262 Summary Report**

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Each sample pack contained three known test-fires and four questioned recovered items. Participants were asked to determine if any of the questioned recovered items were discharged from the same firearm as the known test-fires using their existing protocols. Data were returned from 296 participants and are compiled into the following tables:

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

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

# Manufacturer's Information

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Each sample pack contained three known test-fires and four questioned recovered items. Participants were asked to determine if any of the questioned recovered items were discharged from the same firearm as the known test-fires.

**IDENTIFICATION ITEMS:** A predetermined number of batches of ammunition were discharged from the same firearm and the expended ammunition was collected. Out of each batch, the necessary number were selected and marked with their item numbers and sealed into their respective boxes.

**ELIMINATION ITEMS:** A predetermined number of batches of ammunition were discharged from the same firearm (different from the one used for the identification items) and the expended ammunition was collected. This process was repeated for each additional firearm used. Out of each batch, the necessary number were selected and marked with their item numbers and sealed into their respective boxes.

**SAMPLE PACK ASSEMBLY:** For each sample pack, identification items from the same batch, along with elimination items of the same batch, were placed into pre-labeled sample pack boxes.

**VERIFICATION:** During test production, 10% of the ammunition from each batch were selected and intercompared to confirm that markings were consistent. All predistribution laboratories were consistent with each other and the manufacturer's preparation information for all items with the exception of Item 5. One of the three predistribution laboratories reported inconclusive for Item 5. After an internal review of the results, the test was approved for release.

Preparation Information					
<u>Item</u>	<u>Known/ Questioned</u>	<u>Identification/ Elimination</u>	<u>Firearm</u>	<u>Ammunition</u>	<u>Ammunition Component</u>
1	Known	Identification	Taurus Millenium PT111 PRO	Federal American Eagle 9mm Luger 124 grain FMJ	Cartridge Casings
2	Questioned	Elimination	Hi-Point Model 995	Federal American Eagle 9mm Luger 124 grain FMJ	Cartridge Casings
3	Questioned	Identification	Taurus Millenium PT111 PRO	Federal American Eagle 9mm Luger 124 grain FMJ	Cartridge Casings
4	Questioned	Elimination	Hi-Point Model 995	Federal American Eagle 9mm Luger 124 grain FMJ	Cartridge Casings
5	Questioned	Elimination	Tanfoglio Witness	Federal American Eagle 9mm Luger 124 grain FMJ	Cartridge Casings

## **Summary Comments**

This test was designed to allow participants to assess their proficiency in a comparison of recovered cartridge casings. The Item 3 questioned cartridge casing was discharged from the same firearm as the Item 1 known test-fired cartridge casings. The Items 2 and 4 questioned cartridge casings were discharged from a second firearm that was different than the Item 1 known test-fired cartridge casings. The Item 5 questioned cartridge casing was discharged from a third firearm that was different than the Item 1 known test-fired cartridge casings. Refer to the Manufacturer's Information for preparation details.

In Table 1 Examination Results, all 296 responding participants (100%) identified Item 3 as being discharged from the same firearm as the Item 1 known test-fired cartridge cases and either eliminated, reported inconclusive, or did not respond for Items 2, 4, and 5.

# Examination Results

*Were any of the questioned recovered cartridge casings (Items 2-5) discharged from the same firearm as the known test-fired cartridge casings (Item 1)?*

TABLE 1

WebCode	Item 2	Item 3	Item 4	Item 5	WebCode	Item 2	Item 3	Item 4	Item 5
2344FE	No	Yes	No	No	3Q28QG	No	Yes	No	No
274CNU	No	Yes	No	No	3Q7M74	No	Yes	No	No
27QLXY	No	Yes	No	No	3ZGPR4	No	Yes	No	Inc
29RLZG	No	Yes	No	No	426KRH	No	Yes	No	No
2BEB CG	No	Yes	No	No	47GNFY	No	Yes	No	No
2EDL9G	No	Yes	No	No	4DW6AU	No	Yes	No	No
2EWFYJ	No	Yes	No	No	4DWAMG	No	Yes	No	No
2G96FA	No	Yes	No	No	4GCUBH	No	Yes	No	No
2LTJNN	No	Yes	No	No	4HTTNF	No	Yes	No	No
2THXLV	No	Yes	No	No	4JH4JE	No	Yes	No	No
2UVAN7	No	Yes	No	No	4QM2A7	No	Yes	No	No
2X98XE	No	Yes	No	No	4TRNMB	No	Yes	No	No
2Y3ZTX	No	Yes	No	No	4Z93PG	No	Yes	No	No
32NYLM	No	Yes	No	No	66WB9D	No	Yes	No	No
34RWT9	No	Yes	No	No	6CLMQN	No	Yes	No	No
37G73A	No	Yes	No	No	6GCYN7	No	Yes	No	No
38G4EQ	No	Yes	No	No	6HPJGF	No	Yes	No	No
39K7WE	No	Yes	No	No	6RDG3E	No	Yes	No	No
3BCXCR	No	Yes	No	No	6T93RY	No	Yes	No	No
3DGLPW	No	Yes	No	No	72VHU9	No	Yes	No	No
3HBHD3	No	Yes	No	No	77R6PH	No	Yes	No	No
3HRJDJ	No	Yes	No	No	77R8D2	No	Yes	No	No
3K3GTL	No	Yes	No	No	7GND7Y	No	Yes	No	No

TABLE 1

WebCode	Item 2	Item 3	Item 4	Item 5	WebCode	Item 2	Item 3	Item 4	Item 5
7HF9T9	No	Yes	No	No	A26QBY	No	Yes	No	No
7JCRVA	No	Yes	No	No	A3TYNF	No	Yes	No	No
7JYXGU	No	Yes	No	No	A646XN	No	Yes	No	No
7RAC2B	No	Yes	No	No	A9JJJA	No	Yes	No	No
7UWV7F		Yes			ABD4R3	No	Yes	No	No
7V8XTE	No	Yes	No	No	ABPW83	No	Yes	No	No
7XUCGN	No	Yes	No	No	ADGWNL	No	Yes	No	No
83MXLW	No	Yes	No	No	AFHYB3	No	Yes	No	No
87N43M	No	Yes	No	No	ATV6M6	No	Yes	No	No
8D7AYU	No	Yes	No	No	AWXVYB	No	Yes	No	No
8J8RAZ	No	Yes	No	No	AZX8VB	No	Yes	No	No
8JUXRE	No	Yes	No	No	B49LWM	No	Yes	No	No
8K8PMG	No	Yes	No	No	B93HJT	No	Yes	No	No
8LERPE	No	Yes	No	Inc	B9X7TB	No	Yes	No	No
8WVTQ7	No	Yes	No	No	BCY8ZZ	No	Yes	No	No
8Y946Y	No	Yes	No	No	BLMZAB	No	Yes	No	No
93YUQZ	No	Yes	No	Inc	BPPYPA	No	Yes	No	No
999B3A	No	Yes	No	No	BZL3QH	No	Yes	No	No
9CPHL4	No	Yes	No	No	C2W7ZZ	No	Yes	No	No
9GXYVR	No	Yes	No	No	CHJPT2	No	Yes	No	No
9KLBWU	No	Yes	No	No	CMUWWR	No	Yes	No	No
9VGNR9	No	Yes	No	No	CPKYZU	No	Yes	No	No
9WC8UA	No	Yes	No	No	CRA9BG	No	Yes	No	No
A23YJH	No	Yes	No	No	CW3CW8	No	Yes	No	No
A26NMF	No	Yes	No	No	CXHQA9	No	Yes	No	No

TABLE 1

WebCode	Item 2	Item 3	Item 4	Item 5	WebCode	Item 2	Item 3	Item 4	Item 5
D4XR6C	No	Yes	No	No	ERMJZY	No	Yes	No	No
D4XUTV	No	Yes	No	Inc	EUR4T7	No	Yes	No	No
D4YTL4	No	Yes	No	No	EZV8FJ	No	Yes	No	No
D8YUUD	No	Yes	No	No	EZVCT7	No	Yes	No	No
DAP2B4	No	Yes	No	No	F3FJRJ	No	Yes	No	No
DAPXLZ	No	Yes	No	No	FACC39	No	Yes	No	No
DDNC74	No	Yes	No	No	FADBZM	No	Yes	No	No
DHEMJM	No	Yes	No	No	FKU3H7	No	Yes	No	No
DK7LWL	No	Yes	No	No	FMLUWW	No	Yes	No	No
DL4VTN	No	Yes	No	No	FPU8GJ	No	Yes	No	Inc
DLHFE8	No	Yes	No	No	FVE69D	No	Yes	No	No
DNN6FV	No	Yes	No	No	G8PY2H	No	Yes	No	No
DQWXU3	No	Yes	No	No	G9LAWK	No	Yes	No	No
E3KJFN	No	Yes	No	No	GFJ6VJ	No	Yes	No	No
E4UNN7	No	Yes	No	No	GJGNVW	No	Yes	No	No
E7EHL8	No	Yes	No	No	GQ2LL6	No	Yes	No	No
EA3R2Z	No	Yes	No	Inc	GRVEE3	No	Yes	No	No
EBT9V9	No	Yes	No	No	H4KNK9	No	Yes	No	No
EC7RV6	No	Yes	No	No	H4YDJE	No	Yes	No	No
EG38PM	No	Yes	No	No	H4YHW3	No	Yes	No	No
EHFYG4	No	Yes	No	No	HD9JH3	No	Yes	No	No
EJ9UZ7	No	Yes	No	No	HGTDE4	No	Yes	No	No
EKEEN7	No	Yes	No	No	HH74LM	No	Yes	No	No
EM939M	No	Yes	No	No	HH74N8	No	Yes	No	No
EPUMDQ	No	Yes	No	No	HL6EJ8	No	Yes	No	No

TABLE 1

WebCode	Item 2	Item 3	Item 4	Item 5	WebCode	Item 2	Item 3	Item 4	Item 5
HL6G8Q	No	Yes	No	Inc	LFLNKG	No	Yes	No	No
HQVPU7	Inc	Yes	Inc	No	LFLRTX	No	Yes	No	No
HVU66E	No	Yes	No	No	LH939Q	No	Yes	No	No
HYN7Z2	No	Yes	No	No	LL9BEM	No	Yes	No	No
J3MXRY	No	Yes	No	No	LLA9PH	No	Yes	No	No
J74ZY4	No	Yes	No	No	LX22TY	No	Yes	No	No
J79HX3	No	Yes	No	Inc	M48QDR	No	Yes	No	No
J7LDZL	No	Yes	No	No	MAAWRV	No	Yes	No	No
J99TPW	No	Yes	No	No	MDCXTR	No	Yes	No	No
JLZJAZ	No	Yes	No	No	MEK8MA	No	Yes	No	No
JNNVBR	No	Yes	No	No	MFFQNC	No	Yes	No	No
JTXD4	No	Yes	No	No	MGUXCE	No	Yes	No	No
K27ZXE	No	Yes	No	No	MJGUFX	No	Yes	No	No
K72UVF	No	Yes	No	Inc	MVUUB7	No	Yes	No	No
K7GXLZ	No	Yes	No	No	MXXRJD	No	Yes	No	No
K96PCW	No	Yes	No	No	MZNTMG	No	Yes	No	No
K9P8W7	No	Yes	No	No	N7A72A	No	Yes	No	No
KG3KAV	No	Yes	No	No	NBK4PW	No	Yes	No	No
KKZ2PB	No	Yes	No	No	NBNJ4H	No	Yes	No	No
KTCV7X	No	Yes	No	No	NJGYTL	No	Yes	No	No
KVJBD4	No	Yes	No	No	NJUL7U	No	Yes	No	No
KVJDZM	No	Yes	No	No	NKP7VE	No	Yes	No	No
KVYJHX	No	Yes	No	No	NMDKKP	No	Yes	No	No
L8PQWE	No	Yes	No	No	NMG6CX	No	Yes	No	No
LFGBUY	No	Yes	No	No	NVN4GT	No	Yes	No	No

TABLE 1

WebCode	Item 2	Item 3	Item 4	Item 5	WebCode	Item 2	Item 3	Item 4	Item 5
P7KEKU	No	Yes	No	No	TFXQBN	No	Yes	No	No
PCQZFH	No	Yes	No	No	TL7W9E	No	Yes	No	No
PCRYRY	No	Yes	No	No	TW9EJH	No	Yes	No	No
PEXFNA	No	Yes	No	Inc	U2WDD4	No	Yes	No	No
PGLTPZ	No	Yes	No	No	U78C2Q	No	Yes	No	No
PKNNFV	No	Yes	No	No	U8K27N	No	Yes	No	No
PQAL2X	No	Yes	No	No	UCVABY	No	Yes	No	No
PQAEK	No	Yes	No	No	UGQ49Z	No	Yes	No	No
PR82AN	No	Yes	No	No	UJCME4	No	Yes	No	No
PRJR4Z	No	Yes	No	No	UNR3ZP	No	Yes	No	No
QD6MTQ	No	Yes	No	No	UP3XN3	No	Yes	No	No
QEBECR	No	Yes	No	No	UPMK2Q	No	Yes	No	No
QFAFJJ	No	Yes	No	No	UR7Y6Q	No	Yes	No	No
QPY4HR	No	Yes	No	No	UVTALJ	No	Yes	No	No
QU43PB	No	Yes	No	No	V2U7LV	No	Yes	No	No
QWV26U	No	Yes	No	No	V3KADG	No	Yes	No	No
QYHFU6	No	Yes	No	No	V43XYH	No	Yes	No	No
QYMWR4	No	Yes	No	No	VA4GVL	No	Yes	No	No
R7XMMT	No	Yes	No	No	VA8UMP	No	Yes	No	No
RGVJQG	No	Yes	No	No	VEFFBL	No	Yes	No	No
RHVG4X	No	Yes	No	Inc	VF9BTN	No	Yes	No	No
RNJ4WG	No	Yes	No	Inc	VFVK8Y	No	Yes	No	No
RWRV27	No	Yes	No	No	VLZL4M	No	Yes	No	No
T468UW		Yes			VN7444	No	Yes	No	No
T7TKGL	No	Yes	No	No	VNL69Q	No	Yes	No	No



TABLE 1

WebCode	Item 2	Item 3	Item 4	Item 5	WebCode	Item 2	Item 3	Item 4	Item 5
VU6L8U	No	Yes	No	No	XX6DPJ	No	Yes	No	Inc
VXBU8Y	No	Yes	No	No	XZRXYM	No	Yes	No	No
VYPH87	No	Yes	No	No	Y2YUEH	No	Yes	No	No
W8CVJB	No	Yes	No	No	Y3RPXK	No	Yes	No	No
W8DTWQ	No	Yes	No	No	Y4LHQH	No	Yes	No	No
WDHAPL	No	Yes	No	No	Y8LKX8	No	Yes	No	No
WDYJHL	No	Yes	No	No	Y9H3Y9	No	Yes	No	No
WGL4NQ	No	Yes	No	No	Y9HZCP	No	Yes	No	No
WNKPBJ	No	Yes	No	No	YF24JR	No	Yes	No	No
WRJ4ZU	No	Yes	No	No	YGYEEU	No	Yes	No	No
WWC6ZN	No	Yes	No	No	YM3FFN	No	Yes	No	No
WX7XTL	No	Yes	No	No	YM3H38	No	Yes	No	No
WYZG2E	No	Yes	No	No	YMY3ML	No	Yes	No	No
X3XHG3	No	Yes	No	Inc	YQ2TX8	No	Yes	No	No
X7WW4R	No	Yes	No	No	YQ3QBN		Yes		
XEP6NH	No	Yes	No	No	YWNNTJ	No	Yes	No	No
XF6B3M	No	Yes	No	No	YXFHWF	No	Yes	No	No
XFKMQJ	No	Yes	No	No	Z8JAJF	No	Yes	No	No
XHCNUM	No	Yes	No	No	ZB2ED4	No	Yes	No	No
XJ88VN	No	Yes	No	No	ZB7UNJ	No	Yes	No	No
XL7KDL	No	Yes	No	No	ZD9UKA	No	Yes	No	No
XPAGZV	No	Yes	No	No	ZDAP8M	No	Yes	No	No
XTVZ7Y	No	Yes	No	No	ZEKC4F	No	Yes	No	No
XU73UJ	No	Yes	No	No	ZQDQ6X	No	Yes	No	No
XVYVP3	No	Yes	No	No	ZUFNFQ	No	Yes	No	No

**Response Summary**Participants: **296**

Were any of the questioned recovered cartridge casings (Items 2-5) discharged from the same firearm as the known test-fired cartridge casings (Item 1)?

		Item 2	Item 3	Item 4	Item 5
<b>Responses</b>	Yes	<b>0 (0.0%)</b>	<b>296 (100.0%)</b>	<b>0 (0.0%)</b>	<b>0 (0.0%)</b>
	No	<b>292 (98.6%)</b>	<b>0 (0.0%)</b>	<b>292 (98.6%)</b>	<b>279 (94.3%)</b>
	Inc	<b>1 (0.3%)</b>	<b>0 (0.0%)</b>	<b>1 (0.3%)</b>	<b>14 (4.7%)</b>

**NOTE:** Tallies may not add up to the total number of participants, if a participant did not report a response.

# Conclusions

## TABLE 2

WebCode	Conclusions
2344FE	Item 001-1 consists of three Federal brand 9mm Luger caliber fired cartridge cases reportedly test-fired from the suspect's firearm. These items were sub itemized as Items 001-1A, 001-1B, and 001-1C to facilitate examination. Items 001-2, 001-3, 001-4, and 001-5 are each a Federal brand 9mm Luger caliber fired cartridge case. I microscopically intercompared the four fired cartridge cases from the scene and determined that there are three different firearms responsible for firing Items 001-2, 001-3, 001-4, and 001-5. I observed agreement of all discernable class characteristics and sufficient agreement of individual characteristics to conclude that Items 001-2 and 001-4 were fired in the same firearm. I observed significant disagreement of class and individual characteristics to conclude that Items 001-3 and 001-5 were not fired in the same firearm that was responsible for firing Items 001-2 and 001-4. I observed significant disagreement of class and individual characteristics to conclude that Items 001-3 and 001-5 were not fired in the same firearm. I microscopically compared one of the cartridge cases (Item 001-1A) reportedly test-fired in the recovered firearm to Item 001-3 from the scene. I observed significant agreement of class and individual characteristics to determine that Item 001-3 was fired in the recovered firearm. None of the other submitted cartridge cases (Items 001-2, 001-4, or 001-5) were fired in the recovered firearm.
274CNU	Item 003 and test fired cartridge case, 001-01-A, are an Identification. Items 002 and 004 are an Identification to each other. Item 005 is an elimination to items 002 through 004 and test fired cartridge case, 001-01-A.
27QLXY	From the general firing marks and fine detail within we are of the opinion that item 3 has been discharged from the same firearm as the test fires in item 1.
29RLZG	1. The questioned cartridge case (Item 3) was discharged from the firearm Taurus Millennium PT-111 Pro (Item 1). 2. The questioned cartridge casing (Items 2, 4 and 5) were not discharged from the firearm Taurus Millennium PT-111 Pro (Item 1).
2BEBCG	When analyzing the incriminated vanilla items 2, 3, 4, 5, it is concluded that three firearms were used. The accused vanilla item 3 was shot by the Taurus brand pistol type firearm model Millennium PT-111 Pro caliber 9x19mm, reference samples item 1; that is, THERE IS IDENTITY. The incriminated vanilla item 2 and the incriminated vanilla item 4 were shot by the same 9x19mm caliber pistol-type firearm; That is to say, that THERE IS IDENTITY among the incriminated vanillas. The incriminated vanilla item 5, caliber 9x19mm, presents differences in individual characteristics with the reference vanillas item 1 and the incriminated vanillas items 2, 3 and 4, which leads to the conclusion that they do not share a common origin; That is to say, THERE IS NO IDENTITY.
2EDL9G	item 3 gives identity with item 1 which corresponds to patterns of the taurus millenium weapon. item 2 and 4 gives identity between them. item 5 does not give identity with any of the related items. it is concluded that three firearms were involved at the scene.
2EWFYJ	1. Examination of Exhibit 1 revealed it to be three (3) fired 9mm Luger caliber cartridge cases bearing the Federal brand headstamp. Exhibit 1 was test fired in the suspect's firearm and submitted to the laboratory for comparison purposes. Exhibit 1 is suitable for microscopic comparison. 2. Examination of Exhibits 2 through 5 revealed them to be four (4) fired 9mm Luger caliber cartridge cases bearing the Federal brand headstamp. Each fired cartridge case is suitable for microscopic comparison. 3. Exhibits 1 through 5 were microscopically compared to one another. As a result, the following was concluded: a. Due to a difference in class characteristics (firing pin impression, firing pin aperture shape, and breech face impressions), Exhibit 2 was eliminated as having been fired in the same firearm as Exhibit 1. b. Due to a

TABLE 2

WebCode	Conclusions
	sufficient agreement of individual characteristics, Exhibits 1 and 3 were identified as having been fired in the same firearm. c. Due to a sufficient agreement of individual characteristics, Exhibits 2 and 4 were identified as having been fired in the same firearm. d. Due to a sufficient disagreement of individual characteristics, Exhibit 5 was eliminated as having been fired in the same firearm as Exhibits 2 and 4. e. Due to a disagreement of class characteristics and a sufficient disagreement of individual characteristics, Exhibit 5 was eliminated as having been fired in the same firearm as Exhibits 1 and 3.
2G96FA	Items 1 through 5 (fired cartridge cases) were microscopically examined and compared. Items 1 and 3 (fired cartridge cases) were fired in the same firearm, firearm not submitted. (Firearm 1). Items 2 and 4 (fired cartridge cases) were fired in the same firearm, firearm not submitted. (Firearm 2). Item 5 (fired cartridge case) was not fired in the same firearm that fired Items 1 and 3 (fired cartridge cases) or the firearm that fired Items 2 and 4 (fired cartridge cases), firearms not submitted. (Firearm 3). An identification opinion is reached when the evidence exhibits an agreement of class characteristics and a sufficient agreement of individual marks. Sufficient agreement is related to the significant duplication of random striated/impressed marks as evidenced by the correspondence of a pattern or combination of patterns of surface contours. The interpretation of identification is subjective in nature, and based on relevant scientific research and the reporting examiner's training and experience.
2LTJNN	Item 3 was identified microscopically as having been fired in the same firearm that fired the test fires, Item 1, based on agreement of the combination of individual characteristics and all discernible class characteristics. Item 5 was microscopically eliminated as having been fired in the same firearm that fired the test fires, Item 1, due to disagreement of individual characteristics. Items 2 and 4 were microscopically eliminated as having been fired in the same firearm that fired the test fires, Item 1, and in the same unknown firearm as Item 5 due to disagreement of discernible class characteristics. Items 2 and 4 were identified microscopically as having been fired in the same unknown firearm based on agreement of the combination of individual characteristics and all discernible class characteristics. Items 2, 5, and the test fires, Item 1, were imaged into the Integrated Ballistics Identification System (IBIS) / BrassTRAX database and any future identification made from these entries will result in a notification. Test fires are being retained by the Firearms Identification Laboratory; all other items of evidence are being returned.
2THXLV	Cartridge Casing (3) and Know Test fired cartridge casings (1.1, 1.2, 1.3) are IDENTIFIED as having been discharged from the SAME gun based on the observed agreement of their class characteristics and sufficient agreement of their individual characteristics. Cartridge Casing (2,4) are IDENTIFIED as having been discharged from the SAME gun based on the observed agreement of their class characteristics and sufficient agreement of their individual characteristics. Cartridge Casings (2,4) are ELIMINATED as having been discharged from the same gun as cartridge casing (3) and known Test fired cartridge casings (1.1, 1.2, 1.3) based on the observed disagreement of their class characteristics. Cartridge Casing (5) is ELIMINATED as having been discharged from the same gun as cartridge casing (3) and known Test fired cartridge casings (1.1, 1.2, 1.3) based on the observed disagreement of their individual characteristics. Cartridge Casing (5) is ELIMINATED as having been discharged from the same gun as cartridge casings (2, 4) based on the observed disagreement of their class characteristics.
2UVAN7	Items 1 through 5 were examined and analyzed using microscopy. The Item 3 cartridge case was identified as having been fired in the same firearm that reportedly fired the Item 1 cartridge cases based on corresponding class and individual characteristics. The Items 2 and 4 cartridges cases were identified as having been fired in the same firearm based on

TABLE 2

WebCode	Conclusions
	corresponding class and individual characteristics. The Items 2 and 4 cartridge cases were eliminated as having been fired in the same firearm that reportedly fired the Item 1 cartridge cases due to differences in class characteristics. The Item 5 cartridge case was eliminated as having been fired in the same firearm that reportedly fired the Item 1 cartridge cases due to differences in individual characteristics and as having been fired in the same firearm as the Items 2 and 4 cartridge cases due to differences in class characteristics.
2X98XE	A. The cartridge case described in the item 1 and item 3 are 9mm Luger, and were fired by same firearm (identification). B. The cartridge case described in the item 2 and item 4 are 9mm Luger, and were fired by same firearm (identification). C. The cartridge case described in the item 5 is 9mm Luger, was fired by firearm. Was not fired by the same firearm that fire Items 1 to 4 (elimination).
2Y3ZTX	After microscopic comparison, it was determined that Item# 3 was fired in Item# 1 based on sufficient agreement of class and individual characteristics of the breech face marks. After microscopic comparison, it was determined that Items# 2 and 4 were fired in the same unrecovered firearm based on sufficient agreement of class and individual characteristics of the breech face and firing pin aperture shear marks. Items# 2 and 4 were not discharged in Item# 1 based on differences of class characteristics (FP shape). Item# 5 was not discharged in Item# 1 based on differences of individual characteristics (FP impression and breech face marks). Item# 5 was not discharged in the same firearm as Items# 2 and 4 based on differences of class characteristics (FP shape).
32NYLM	Four(4) cartridge casings (2+1+1) of 9x19 mm diameter and type were classified and divided into three(3) groups 1) Item 2 and Item 4 were fired from the same weapon and do not fired with the Item 1 weapon. 2) Item 3 was fired with the Item 1 weapon. 3) Item 5 is not fired with the Item 1 weapon.
34RWT9	The fired cartridge case, item #3, was microscopically identified as having been fired in the firearm that test fired item #1. The fired cartridge cases, items #2 and 4, were microscopically identified as having been fired in the same unknown firearm. The fired cartridge case, item #5, was microscopically identified as having been fired in a second unknown firearm.
37G73A	1. Items 2 and 4 were fired from the same 9 mm calibre pistol, however, they were not fired from the pistol used for the test-fired cartridges cases (Item 1). 2. Item 3 and the test-fired cartridge cases (Item 1) were fired from the same 9 mm calibre pistol. 3. Item 5 was fired from a 9 mm calibre pistol, which was different from both the one used for the test-fired cartridge cases (Item 1) and the pistol used to fire Items 2 and 4.
38G4EQ	Item 3 were discharged from the same firearm as the known test-fired cartridge casings (item 1). Items 2 and 4 have been discharged from the same firearm but different from the one as known test-fired cartridge casings (item 1). Item 5 was not discharged from the same firearm as the know test-fired cartridge casings (item 1) and was not discharged from the same firearm as items 2 and 4.
39K7WE	Once the comparative study of the samples has been carried out, it is established that the sample pattern item 1, with the sample item 3, present identity. Vanilla 2 and vanilla 4 present identity characteristics between them. The vanilla of item 5 is established as non-identity because they present different characteristics.
3BCXCR	The cartridge case item 3 was fired by the suspect firearm item 1 Items 2, 4 and 5 were fired by other firearms
3DGLPW	Through microscopic examination and comparison, it was determined that there are three (3) firearms represented by the evidence cartridge cases. Items 1 and 3 were fired by the same

TABLE 2

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	firearm. Items 2 and 4 were fired by a second firearm. Item 5 was fired by a third firearm.
3HBHD3	Item 3 was fired in the same firearm as Item 1 (identification). This is also the opinion of Firearms Examiner NAME. Item 2 and Item 4 were fired in the same firearm (identification). This is also the opinion of Firearms Examiner NAME. Item 2 and Item 4 were not fired in the same firearm as Item 1 (elimination). This is also the opinion of Firearms Examiner NAME. Item 5 was not fired in the same firearm as Item 2 and Item 4 (elimination). This is also the opinion of Firearms Examiner NAME. Item 5 was not fired in the same firearm as Item 1 (elimination). This is also the opinion of Firearms Examiner NAME.
3HRJDJ	The retrieved case labeled as Item 3 has been fired in the Taurus Millennium PT-111 Pro (Item 1). Moreover, the two cases labeled as Item 2 and Item 4 have been fired in a second weapon. Finally, the case labeled as Item 5 has been fired in a third weapon. In conclusion, the 4 cases recovered from the crime scene have been fired in 3 different weapons: - the seized Taurus Millennium PT-111 Pro (Item 3). - a second weapon (Item 2, Item 4) - a third weapon (Item 5)
3K3GTL	SUMMARY OF RESULTS AND INTERPRETATIONS Item 1.1-1.5: The expended casings were originally components of Federal brand 9mm caliber cartridges. Item 1.1 (reported test fires from a Taurus Millennium PT-111) and Item 1.3 were microscopically examined and compared. Based on the observed agreement of their class characteristics and sufficient agreement of their individual characteristics, Item 1.3 is identified as having been fired from the Taurus Millennium PT-111 that generated the reported test fires (Item 1.1). Item 1.2 and Item 1.4 were microscopically examined and compared. Based on the observed agreement of their class characteristics and sufficient agreement of their individual characteristics, Items 1.2 and 1.4 are identified as having been fired from an unknown firearm. Item 1.5 and Items 1.1-1.4 were microscopically examined and compared. Based on the observed disagreement of class and individual characteristics, Item 1.5 is eliminated as having been fired from the Taurus Millennium PT-111 that generated the reported test fires (Item 1.1) and the unknown firearm that fired Items 1.2 and 1.4.
3Q28QG	The cartridge casing from Item #3 was fired in the Taurus Millennium PT-111 Pro pistol discovered in the suspect's possession. The cartridge casings from Item #2 and #4 were fired in a second firearm, being a semi-automatic pistol of a different model. Finally, the cartridge casing from Item #5 was fired in a third firearm, being a semi-automatic pistol of another different model.
3Q7M74	"Three known test-fired cartridge casings" (item 01-01) were identified as having been fired in a single firearm, reportedly a Taurus PT-111 Millennium Pro pistol. One cartridge case (item 01-03) was identified as having been fired in the same firearm as item 01-01, reportedly a Taurus PT-111 Millennium Pro pistol. Two cartridge cases (items 01-02 and 01-04) were identified as having been fired in a single firearm and were eliminated as having been fired in the same firearms as items 01-01 and 01-05. One cartridge case (item 01-05) was eliminated as having been fired in the same firearms as items 01-01 and 01-02.
3ZGPR4	The submitted fired cartridge cases (Items 2 & 4) were eliminated as having been fired in the same firearm as the submitted test fires (Items 1A, 1B, & 1C) based on differences in individual characteristics. The submitted fired cartridge cases (Items 2 & 4) were identified as having been fired in a single unknown firearm (oriented black/black) capable of chambering and firing a 9mm Luger caliber cartridge. Due to commonly seen class characteristics, a list of potential makes/models was not generated. The submitted fired cartridge case (Item 3) was identified as having been fired in the submitted firearm that fired the submitted test fires (Items 1A, 1B, & 1C). The submitted fired cartridge case (Item 3) was eliminated as having been fired in the same single unknown firearm as the submitted fired cartridge cases (Items 2 & 4) based on

TABLE 2

WebCode	Conclusions
	differences in individual characteristics. The submitted fired cartridge case (Item 5) was neither identified or eliminated as having been fired in the firearm that fired the submitted test fires (Items 1A, 1B, & 1C) and the submitted fired cartridge case (Item 3). There is agreement of all discernable class characteristics without agreement or disagreement of individual characteristics due to an absence, insufficiency, or lack of reproducibility. The submitted fired cartridge case (Item 5) was eliminated as having been fired in the same single unknown firearm as the submitted fired cartridge cases (Items 2 & 4) based on differences in individual characteristics.
426KRH	This report refers to exhibits by Lab Number. The following results only apply to the items tested. The Exhibit 1.1 through 1.3 cartridge cases and the Exhibit 3 cartridge case were identified as having been fired in the same firearm. The Exhibit 2 cartridge case and the Exhibit 4 cartridge case were identified as having been fired in the same firearm. The Exhibits 1.1 through 1.3 and the Exhibit 3 cartridge cases were excluded as having been fired in the same firearm as Exhibits 2, 4, and 5. The Exhibit 2 and the Exhibit 4 cartridge cases were excluded as having been fired in the same firearm as Exhibit 5. See the Appendix of this report for further context regarding the conclusions listed above. [Appendix was not attached.]
47GNFY	Other Results The Item 1 packaging contained Item 1-1 through Item 1-3 cartridge cases. Comparison Results The Item 1-1 through Item 1-3 and Item 3 cartridge cases were fired by a different firearm than the Item 2 and Item 4 cartridge cases and the Item 5 cartridge case. The Item 2 and 4 cartridge cases were fired by a different firearm than the Item 5 cartridge case. The Item 1-1 through Item 1-3 cartridge cases and the Item 3 cartridge case were fired by the same firearm. There is agreement of all discernible class characteristics and possible individual characteristics between the Item 2 and Item 4 cartridge cases. However, the potential for subclass carryover could not be eliminated. Therefore, the Item 2 and Item 4 cartridge cases were either fired by the same firearm, or by a different firearm manufactured with the same tool in the same approximate state of wear. There is agreement of all discernible class characteristics between cycling marks found on the Item 2 and Item 4 cartridge cases; however, the comparison of individual characteristics was inconclusive. Therefore, the Item 2 and Item 4 cartridge cases could not be identified or eliminated as having been cycled through the same firearm. NIBIN Results The Integrated Ballistics Identification System (IBIS) is a local automated ballistics imaging and analysis system that populates a computerized database of images from cartridge cases and firearm test fires to identify possible associations between crimes. The National Integrated Ballistic Information Network (NIBIN) is a national program managed by the Bureau of Alcohol, Tobacco, Firearms, and Explosives that automates the imaging of the unique identifiers of cartridge cases and test fires for comparison across a national network of participating sites. Unless otherwise requested, items entered into NIBIN by this laboratory are automatically searched against other entries made in [States]. Your agency will be notified by the NIBIN National Correlation and Training Center (NNCTC) if any forensic leads are developed. The Item 1-1, Item 2, and Item 5 cartridge cases were entered into NIBIN. Methodology The following methodologies were used in the examination of this case: Visual Examination Physical Examination Microscopic Examination Microscopic Comparison Database Search
4DW6AU	Cartridge casing (3) and Known test fired cartridge casings (1.1-1.3) are IDENTIFIED as having been discharged from the SAME gun based on the observed agreement of their class characteristics and sufficient agreement of their individual characteristics. Cartridge casing (2,4) are IDENTIFIED as having been discharged from the SAME gun based on the observed agreement of their class characteristics and sufficient agreement of their individual characteristics. Cartridge casing (5) is ELIMINATED as having been discharged from the same



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	gun as Cartridge casing (3) and known test fired cartridge casings (1.1-1.3) based on the observed disagreement of individual characteristics. Cartridge casing (5) is ELIMINATED as having been discharged from the same gun as Cartridge casings (2,4) based on the observed disagreement of class characteristics. Cartridge casings (2,4) are ELIMINATED as having been discharged from the same gun as Cartridge casing (3) and known test fired cartridge casings (1.1-1.3) based on the observed disagreement of class characteristics.
4DWAMG	The Exhibit 1 and 3 fired cartridge cases were identified as having been fired in the same firearm. The Exhibit 2 and 4 fired cartridge cases were identified as having been fired in the same firearm. The Exhibit 2 and 4 fired cartridge cases were excluded as having been fired in the same firearm as Exhibits 1 and 3. The Exhibit 5 fired cartridge case was excluded as having been fired in the same firearm as Exhibits 1 and 3 and the same firearm as Exhibits 2 and 4.
4GCUBH	The test standards (Item #1) were compared to Item #3 and found to have sufficient agreement in class characteristics (caliber, firing pin impression shape) and individual characteristics (breech face marks, firing pin impression). Item #3 was identified as having been discharged in the same firearm as the test standards (Item #1). (Firearm #1). Items #2 and #4 were compared and found to have sufficient agreement in class characteristics (caliber, firing pin impression shape) and individual characteristics (breech face marks, firing pin impression). Items #2 and #4 were identified as having been discharged in the same unknown firearm. (Firearm #2). The test standards (Item #1) were compared to Items #2 and #4 and found to not have sufficient agreement in individual characteristics (differences in breech face marks and firing pin impressions). Items #2 and #4 were eliminated from having been discharged in the same firearm as the test standards. Item #5 was compared to the test standards (Item #1) and Items #2 and #4 and found to not have sufficient agreement in individual characteristics (differences in breech face marks, firing pin impression, ejector marks). Item #5 was eliminated as having been discharged in the same firearm as the test standards (Item #1) or Items #2 and #4. (Firearm #3).
4HTTNF	Items 2, 3, 4, and 5 (cartridge cases) were microscopically compared to test fired cartridge cases from Item 1 (firearm). Based on agreement of discernable class characteristics and sufficient corresponding individual markings observed, Item 3 (cartridge case) was identified as having been fired in Item 1 (firearm). Because of differences observed in class or individual characteristics, Items 2, 4, and 5 (cartridge cases) were eliminated as having been fired from Item 1 (firearm).
4JH4JE	Once the comparative study was carried out, it was concluded that the case identified as item 3 is identical to the case of item 1, which indicates that they were struck by the same firearm, pistol brand Taurus Millennium PT-111 Pro.
4QM2A7	Item 3 was fired in the same firearm as the item 1 test fires. Items 2 and 4 were fired in a second firearm. Item 5 was fired in a third firearm.
4TRNMB	The test-fired cartridge cases in Item 1 were compared to the fired cartridge cases in Items 2-5 using a comparison microscope. Based on the examination, it is my opinion that there was agreement of discernable class characteristics and sufficient agreement of individual characteristics to conclude that Item 3 was fired in the same firearm as Item 1. Based on the examination, it is my opinion that there was significant disagreement of discernable class characteristics and/or individual characteristics to conclude that Items 2, 4, and 5 were not fired in the same firearm as Item 1.
4Z93PG	Compared the test fires from item 1-1 to items 1-2 through 1-5. After physical and microscopic examination of the items above it is my opinion that: A/ The discharged cartridge casing mentioned in item 1-3 above was fired from the weapon that produced test fires described in



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	<p>item 1-1 above. Identification B/ The discharged cartridge casings mentioned in items 1-2 and 1-4 above were fired from the same unknow weapon capable of firing 9mm caliber ammunition. Identification C/ The discharged cartridge casings mentioned in items 1-2 and 1-4 above were not fired from the same weapons that fired items 1-1, 1-3, or 1-5 due to a disagreement of individual markings. Exclusion D/ The discharged cartridge casing mentioned in item 1-5 above was fired from an unknown weapon capable of firing 9mm caliber ammunition, not the same weapon that fired items 1-1 through 1-4 above, due to a disagreement of individual markings. Exclusion</p>
66WB9D	<p>After conducting the comparative study, it was determined that item 3 has the same class characteristics and enough individual characteristics to establish its identity with item 1.</p>
6CLMQN	<p>The item 3 cartridge case is identified as having been fired in the same firearm that fired the item 1A, 1B, and 1C cartridge cases. The item 2, 4, and 5 cartridge cases are eliminated as having been fired in the same firearm that fired the item 1A, 1B, and 1C cartridge cases. The item 2 and 4 cartridge cases are identified as having been fired in an unknown firearm. The item 5 cartridge case is eliminated as having been fired in the same firearms that fired the item 1A, 1B, 1C, 2, 3, and 4 cartridge cases. The item 5 cartridge case was fired a second unknown firearm.</p>
6GCYN7	<p>Item 3 was fired in the same firearm as the item 1 test fires. Items 2 and 4 were fired in a second firearm. Item 5 was fired in a third firearm.</p>
6HPJGF	<p>1. Examination of Exhibit 1 revealed three fired 9mm Luger cartridge cases marketed by Federal. Exhibit 1 is suitable for microscopic comparison. 2. Examination of Exhibits 2 - 5 revealed each contains one fired 9mm Luger cartridge case marketed by Federal. Exhibits 2 - 5 are suitable for microscopic comparison. 3. Microscopic comparison revealed Exhibits 1 and 3 were fired in the same firearm due to sufficient agreement of individual characteristics. 4. Microscopic comparison revealed Exhibits 2 and 4 were fired in the same firearm due to sufficient agreement of individual characteristics. 5. Microscopic comparison revealed Exhibits 1 &amp; 3 and Exhibits 2 &amp; 4 were not fired in the same firearm due to disagreement of class characteristics. 6. Microscopic comparison revealed Exhibit 5 and Exhibits 1 &amp; 3 were not fired from the same firearm due to sufficient disagreement of individual characteristics. 7. Microscopic comparison revealed Exhibit 5 and Exhibits 2 &amp; 4 were not fired from the same firearm due to disagreement of class characteristics.</p>
6RDG3E	<p>Item 3 was identified as having been fired in Item 1 pistol based upon sufficient agreement of individual characteristics. Items 2 and 4 were identified as having been fired in the same unknown firearm based upon sufficient agreement of individual characteristics. (Unknown firearm #1) Item 5 retains marks of value for future comparative microscopy. (Unknown firearm #2)</p>
6T93RY	<p>Item 3 was discharged within the same firearm as Item 1 Items 2, 4 and 5 were not discharged within the same firearm as Item 1.</p>
72VHU9	<p>Items F2-1B, F2-3 The cartridge cases were microscopically identified as having been fired in the same firearm. Item F2-2, F2-4 The cartridge cases were microscopically identified as having been fired in the same firearm but a different firearm than the firearm that fired Items F2-1B and F2-3. Item F2-5 The cartridge case was fired in a different firearm than the firearm that fired Items F2-1B and F2-3 and the firearm that fired Items F2-2 and F2-4.</p>
77R6PH	<p>Items 001-01, 001-02, 001-03, 001-04 and 001-05 fired cartridge cases were microscopically examined in conjunction with each other. Based on these microscopic examinations it was determined that: Item 001-03 fired cartridge case was identified as having been fired in the same firearm as Item 001-01 fired cartridge cases Items 001-02, 001-04,</p>

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	and 001-05 fired cartridge cases were eliminated as having been fired in the same firearm as 001-01 fired cartridge cases.
77R8D2	The Item 1, 2, 3, 4, and 5 Federal caliber 9mm Luger cartridge cases were examined microscopically. Item 3 was identified as having been fired in the firearm represented by the Item 1 cartridge cases based on corresponding class and individual characteristics. Item 5 was eliminated as having been fired in the firearm represented by the Item 1 cartridge cases due to differences in individual characteristics. Items 2 and 4 were identified as having been fired in the same firearm based on corresponding class and individual characteristics. Items 2 and 4 were eliminated as having been fired in the same firearm as Item 5 and in the firearm represented by the Item 1 cartridge cases due to differences in class characteristics.
7GND7Y	The fired cartridge cases, 1-02 & 1-04 were identified as having been fired in the same unknown firearm but were eliminated from having been fired in the same firearm as cartridge cases, 1-01, 1-03 & 1-05. The fired cartridge case, 1-03, was identified as having been fired in the Taurus pistol, from which the test fires, 1-01, were reportedly collected. The fired cartridge case, 1-03, was eliminated from having been fired in the same firearm as item 1-05 based on differences in class characteristics. The fired cartridge case, 1-05, was eliminated from having been fired in the Taurus pistol, from which the test fires, 1-01, were reportedly collected.
7HF9T9	The evidence cartridge cases were compared to the test-fired cartridge cases using a comparison microscope. Based on the examination, it is my opinion that: CTS Item 3 was fired in the same firearm that made the test-fires, CTS Item 1, due to the agreement of discernable class characteristics and sufficient agreement of individual characteristics. CTS Items 2, 4, and 5 were not fired in the same firearm that made the test-fires, CTS Item 1, due to the significant disagreement of discernible class characteristics and/or individual characteristics.
7JCRVA	Items 1A, 1B, 1C, 2, 3, 4, and 5 were all fired 9mm Luger cartridge cases marketed by Federal. Item 3 was compared to Items 1A, 1B, and 1C using a comparison microscope. Agreement of class and individual characteristics sufficient for identification was observed. Item 3 was fired by the same firearm as Items 1A, 1B, and 1C. Item 5 was compared to Items 1A, 1B, and 1C using a comparison microscope. Class characteristics agreed; however, significant disagreement of individual characteristics was observed to conclude that Item 5 was not fired by the same firearm as Items 1A, 1B, and 1C. Item 2 was compared to Item 4 using a comparison microscope. Agreement of class and individual characteristics sufficient for an identification were observed. Item 2 and Item 4 were fired in a single firearm. Item 2 was compared to Items 1A, 1B, and 1C using a comparison microscope. Based on differences in class characteristics (breech face) Item 2 was not fired in the same firearm as Items 1A, 1B, and 1C. Therefore, Item 4 was also not fired in the same firearm as Items 1A, 1B, and 1C. Item 5 was compared to Item 4 using a comparison microscope. Based on differences in class characteristics (breech face) Item 5 was not fired in the same firearm as Item 4. Therefore, Item 5 was also not fired in the same firearm as Item 2.
7JYXGU	The following item contained sufficient microscopic individual characteristics and was identified as having been fired in item F2-A-1 (9mm Luger caliber/Taurus/model Millennium PT-111 Pro/unknown serial number). Item F2-A-3: (1) 9mm Luger caliber fired cartridge case. The following items contained different class characteristics than item F2-A-1 (9mm Luger caliber/Taurus/model Millennium PT-111 Pro/unknown serial number) and were eliminated as having been fired in this firearm. Item F2-A-2: (1) 9mm Luger caliber fired cartridge case. Item F2-A-4: (1) 9mm Luger caliber fired cartridge case (inferred). The following item contained sufficient but different microscopic individual characteristics than item F 2-A-1 (9mm Luger caliber/Taurus/model Millennium PT-111 Pro/unknown serial number) and was eliminated as

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7RAC2B	<p>having been fired in this firearm. Item F2-A-5: (1) 9mm Luger caliber fired cartridge case. The following items exhibited the same class characteristics and contained sufficient microscopic individual characteristics and were identified as having been fired in the same unknown firearm. Item F2-A-2: (1) 9mm Luger caliber fired cartridge case. Item F2-A-4: (1) 9mm Luger caliber fired cartridge case The following items contained different class characteristics and were eliminated as having been fired in the same unknown firearm. Item F2-A-2: (1) 9mm Luger caliber fired cartridge case Item F2-A-5: (1) 9mm Luger caliber fired cartridge case.</p> <p>The questioned expended cartridge case identified as ITEM 3 recovered from the crime scene, was discharged by the handgun Taurus Millennium PT-111 Pro seized from the suspect. The three questioned expended cartridge cases identified as ITEM 2, ITEM 4 and ITEM 5 recovered from crime scene, were not discharged by the handgun Taurus Millennium PT-111 Pro seized from the suspect.</p>
7UWV7F	<p>In my opinion, a microscopical comparison of firing marks found in Test Fires from Taurus Millennium PT-111 Pro, and those found in Item 3, has shown there is sufficient agreement of class and individual characteristic markings to conclusively determine that Item 3 was discharged in the pistol Taurus Millennium PT-111 Pro.</p>
7V8XTE	<p>Item 1 was submitted as three test fires from a Taurus brand, model Millennium PT-111 Pro, firearm. Based on the agreement of some class characteristics, items 2 through 5 were microscopically compared to test fired cartridge cases from item 1. The item 3 fired cartridge case was identified as having been fired by the firearm represented by the item 1 test fires based on the sufficient agreement of individual characteristics. Based on differences in class characteristics, items 2, 4, and 5 were eliminated as having been fired by the firearm represented by the item 1 test fires. Based on the agreement of class characteristics, items 2 and 4 were microscopically compared to each other. Both fired cartridge cases were identified as having been fired by the same unknown firearm based on the sufficient agreement of individual characteristics. Based on differences in class characteristics, item 5 was eliminated as having been fired by the same unknown firearm that fired items 2 and 4 fired cartridge cases. In summary, a total of three firearms are represented among items 1 through 5 fired cartridge cases. An identification conclusion is made when there is agreement of all discernible class characteristics and sufficient agreement of a combination of individual characteristics where the extent of agreement exceeds that which can occur in the comparison of toolmarks made by different tools and is consistent with the agreement demonstrated by toolmarks known to have been produced by the same tool. An elimination conclusion is made when there is significant disagreement of discernible class characteristics and/or individual characteristics. The above interpretations of the results of analysis are the opinion of this laboratory.</p>
7XUCGN	<p>The below listed spent cartridge cases were macroscopically and microscopically examined and compared with test fires (Lab Evidence# 001-A1) from the Taurus 9mm Luger pistol, Lab Evidence# 001-A1. It is my opinion that the below listed items were fired from this firearm (identification). Lab Evidence#; Item#; Item Description: 001-A3 3 Spent FC 9mm Luger cartridge case The below listed spent cartridge cases were macroscopically and microscopically examined and compared with test fires (Lab Evidence# 001-A1) from the Taurus 9mm Luger pistol, Lab Evidence# 001-A1. It is my opinion that the below listed items were not fired from this firearm (elimination). The below listed cartridge cases were further microscopically compared to each other. It is my opinion that these cartridge cases were fired from the same unknown firearm (identification). Lab Evidence#; Item#; Item Description: 001-A2 2 Spent FC 9mm Luger cartridge case. 001-A4; 4; Spent FC 9mm Luger cartridge case. The below listed spent cartridge case was macroscopically and microscopically examined and compared with test fires (Lab Evidence# 001-A1) from the Taurus 9mm Luger pistol, Lab Evidence# 001-A1,</p>

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WebCode	Conclusions
	and spent cartridge cases 001-A2 and 001-A4. It is my opinion that the below listed item was not fired from the Taurus pistol, or from the firearms that fired 001-A2 and 001-A4 (elimination). In my opinion, this cartridge case was fired from a second unknown firearm. Lab Evidence#; Item#; Item Description. 001-A5; 5; Spent FC 9mm Luger cartridge case. [Participant submitted data in a format that could not be reproduced in this report.]
83MXLW	Items #1 and #3 were microscopically examined and compared. Based on the observed agreement of their class characteristics and sufficient agreement of their individual characteristics, Items #1 and #3 are identified as having been fired in the same firearm. Item #1 was microscopically examined and compared to Items #2, #4, and #5. Based on the observed disagreement of class and individual characteristics, Item #1 is eliminated as having been fired in the same firearm(s) as Items #2, #4, and #5.
87N43M	In my opinion Items 1 and 3, matched one another and were consistent with the discharge of two shots discharged from the same firearm, that is, a Taurus Millennium PT-111 Pro.(Firearm no1.) Items 2 and 4 matched one another and were consistent with having been discharged from the same barrel (Firearm no2.). The uniquely shaped / faceted firing pin detail may suggest discharge in an improvised or damaged firearm. Item 5 Did not match any other items (1-4) and was discharged in a 3rd firearm.
8D7AYU	CTS 24-5262 NOTES: All unknown Items were evaluated for suitability prior to comparison to unknown(s). Test Cartridge Case 1, Item 1 was compared microscopically to Items 2, 3, 4 and 5. Item 3 was found to have sufficient agreement between firing pin and breech face markings with Item 1; therefore, Item 3 was fired in the recovered firearm. Items 2, 4 and 5 were found to have a disagreement of individual markings with Item 1; therefore, Items 2, 4 and 5 were not fired in the recovered firearm. Items 2, 4 and 5 were compared microscopically. Item 2 was found to have sufficient agreement between firing pin and breech face markings with Item 4, therefore; Items 2 and 4 were fired in the same firearm. Item 5 was found to have a disagreement of individual markings with Item 2 and 4, therefore; Item 5 was not fired in the same firearm as Items 2 and 4. Items 2, 3, 4 and 5 will be forwarded to the Property Custody Division. Equipment Used: Leeds LCF3 Comparison Microscope Serial # 485127
8J8RAZ	Items 1 through 5 were examined and analyzed using microscopy. Item 3 was identified as having been fired in the same firearm as Item 1 based on corresponding class and individual characteristics. Items 2 and 4 were identified as having been fired in the same firearm based on corresponding class and individual characteristics. Items 2 and 4 were eliminated as having been fired in the same firearm as Items 1 and 5 due to differences in class characteristics. Item 5 was eliminated as having been fired in the same firearm as Item 1 due to differences in individual characteristics.
8JUXRE	As a result of microscopic comparison, it was concluded: Item 3 was identified as having been fired in the same firearm that fired Item 1. Item 2 and Item 4 were identified as having been fired in the same unknown firearm. Item 5 was eliminated as having been fired in the same firearm that fired Item 1 and Item 3 based on significant disagreement of class and individual characteristics. Item 5 was eliminated as having been fired in the same firearm that fired Item 2 and Item 4 based on significant disagreement of class and individual characteristics. Item 1 and Item 3 were eliminated as having been fired in the same firearm that fired Item 2 and Item 4 based on significant disagreement of class and individual characteristics.
8K8PMG	The Q1 (Item #2), Q3 (Item #4), & Q4 (Item #5) expended casings were microscopically examined and eliminated as having been fired from the suspect firearm. (Elimination) The Q2 (Item #3) expended casing was examined microscopically and identified as having been fired from the suspect firearm. (Identification)

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8LERPE	After microscopic comparison, it was determined that Case #24-5262 Item #3, one (1) recovered cartridge casing, WAS FIRED from the Taurus Millennium PT-111 Pro firearm based on sufficient agreement of class and individual characteristics of the aperture shear marks and firing drag pin marks. There was sufficient quality and quantity of corresponding individual microscopic markings for an IDENTIFICATION. After microscopic comparison, it was determined that Case #24-5262 Items #2 and 4, two (2) recovered cartridge casings, WERE NOT FIRED from the Taurus Millennium PT-111 Pro firearm based on sufficient agreement of class characteristics but insufficient agreement of individual characteristics. After microscopic comparison of Case #24-5262 Item #5, one (1) recovered cartridge casing, there is insufficient quality and quantity of agreement of individual class characteristics to identify Item #5, one discharged cartridge casing, as having been fired from the Taurus Millennium PT-111 Pro firearm. Therefore, it is INCONCLUSIVE as to whether Item #5 was fired from the Taurus Millennium PT-111 Pro firearm.
8WVTQ7	The submitted cartridge cases were examined and microscopically compared to each other. It was determined that the test fired cartridge cases in Item 1 (known) were fired in the same firearm as the cartridge case in Item 3 (questioned). It was determined that the cartridge case in Item 2 (questioned) was fired in the same unknown firearm as the cartridge case in Item 4 (questioned). It was determined that Item 5 (questioned) was not fired in the group containing Item 1 (Known) or Item 2 (questioned). The associations made in this examination are based on the observation of agreement of all discernable class characteristics and sufficient agreement of individual tool mark characteristics.
8Y946Y	Lab Items #1 (Three (3) FC {Federal} 9mm Luger test fired cartridge cases from Taurus Millennium PT-111 Pro), #2 (one FC {Federal} 9mm Luger fired cartridge case), #3 (one FC {Federal} 9mm Luger fired cartridge case), #4 (one FC {Federal} 9mm Luger fired cartridge case), and #5 (one FC {Federal} 9mm Luger fired cartridge case) were examined and microscopically compared on 11/19/2024. Based on agreement of all discernable class characteristics and sufficient agreement of individual characteristics, Lab Item #3 (one FC {Federal} 9mm Luger fired cartridge case) was positively identified as having been fired in the same firearm as Lab Item #1 (test fired cartridge cases from Taurus Millennium PT-111 Pro). Based on agreement of all discernable class characteristics and sufficient agreement of individual characteristics, Lab Item #2 (one FC {Federal} 9mm Luger fired cartridge case) was positively identified as having been fired in the same firearm as Lab Item #4 (one FC {Federal} 9mm Luger fired cartridge case). Based on disagreement of class and individual characteristics, Lab Items #2 and #4 (two FC {Federal} 9mm Luger fired cartridge cases) were eliminated as having been fired in the same firearm as Lab Items #1 (test fired cartridge cases from Taurus Millennium PT-111 Pro) and #3 (one FC {Federal} 9mm Luger fired cartridge case). Based on disagreement of class and individual characteristics, Lab Item #5 (one FC {Federal} 9mm Luger fired cartridge case) was eliminated as having been fired in the same firearm as Lab Items #1 (test fired cartridge cases from Taurus Millennium PT-111 Pro), #3 (one FC {Federal} 9mm Luger fired cartridge case), #2 (one FC {Federal} 9mm Luger fired cartridge case), and #4 (one FC {Federal} 9mm Luger fired cartridge case).
93YUQZ	The cartridge case in Item 3 was fired in the same gun that fired the test fired cartridge cases in Item 1, based on agreement observed in individual characteristics. The cartridge cases in Items 2 and 4 were not fired in the same gun that fired the test fired cartridge cases in Item 1, based on differences observed in class characteristics. The cartridge case in Item 5 bears class characteristics consistent with the test fired cartridge cases in Item 1. However, no significant similarities in individual characteristics were observed.
999B3A	Item 3 was identified as having been fired from Item 1. Item 2 and Item 4 were identified as

TABLE 2

WebCode	Conclusions
	having been fired from the same unknown firearm. Item 5 was eliminated as having been fired from Item 1. Item 5 was eliminated as having been fired from the same unknown firearm as Item 2 and Item 4.
9CPHL4	A microscopic examination and comparison of the submitted Item #1.3 with test items #01.01 revealed sufficient agreement of class and individual characteristics to conclude that it had been fired from the same gun as Item #01.01 A microscopic examination and comparison of the submitted Item #1.02 and Item #01.04 revealed sufficient agreement of class and individual characteristics to conclude that they had been fired from the same gun. A microscopic examination and comparison of the submitted Item #1.05 with Items #01.01-01.04 revealed sufficient disagreement of class and individual characteristics to conclude that it had not been fired from the same guns as Items #01.01-01.04.
9GXYVR	Items(#2~5) were microscopically examined to each other. Based on the comparative examination, individual characteristics were observed and it was determined that; Item #3 was discharged from the same firearms as known cases(item #1) , and the others(item #2, #4, #5) were not same.
9KLBWV	The Item 01-01A through 01-01C and Item 01-03 fired cartridge cases were identified as being fired in the same firearm, reportedly a Taurus model Millennium PT-111 Pro pistol. The Item 01-02 and Item 01-04 fired cartridge cases were identified as being fired in the same firearm. The Item 01-01A through 01-01C and Item 01-03 fired cartridge cases were eliminated as being fired in the same firearm as the Item 01-02 and 01-04 fired cartridge cases due to differences in class characteristics. The Item 01-05 fired cartridge case was eliminated as being fired in the same firearms as Items 01-01 and 01-03, as well as in the same firearm as Items 01-02 and 01-04 due to differences in class characteristics.
9VGNR9	Exhibit 3 (questioned recovered cartridge case) was identified as having been fired in the same 9mm firearm as exhibit 1 (test fired cartridge casings). Exhibits 2 and 4 (questioned recovered cartridge casings) were identified as having been fired in a second 9mm firearm. Suspect weapons are unknown at this time; however, any suspect weapon should be submitted to the laboratory for analysis. Exhibit 5 (questioned recovered cartridge case) was identified as having been fired in a third 9mm firearm. Suspect weapons are unknown at this time; however, any suspect weapon should be submitted to the laboratory for analysis.
9WC8UA	ITEM 2 and 4: These cartridge cases were eliminated from the item 1 cartridge cases. These cartridge cases were identified to the same unknown firearm. ITEM 3: The cartridge case was identified to the item 1 cartridge cases. ITEM 5: The cartridge case was eliminated from the item 1, 2, 3, and 4 cartridge cases.
A23YJH	The examination of the recovered cartridge casings under a comparison microscope, allows us to conclude that the item 3 was fired from the suspect's firearm. The examination also showed that items 2 and 4 were fired from a second firearm and the item 5 from a third one.
A26NMF	Submission F2 consists of item 1, three cartridge cases test fired from a pistol recovered from the suspect, and items 2 through 5, four cartridge cases recovered from a crime scene. The items were each identified as 9mm Luger cartridge cases. The item 1 cartridge cases were compared to the remaining cartridge cases; examination results are listed below. Based on correspondence of firearm-related class characteristics and significant correspondence of individualizing characteristics, I determined that the item 3 expended cartridge case was fired in the same firearm used to generate the item 1 cartridge cases. Based on correspondence of firearm-related class characteristics and significant differences of individualizing characteristics, I determined that the item 5 expended cartridge case was fired in a firearm different than that used to generate the item 1 cartridge cases. Based on differences in the firearm-related class



TABLE 2

WebCode	Conclusions
A26QBY	<p>characteristics, I determined that the item 2 and the item 4 expended cartridge cases were both fired in a firearm different than that used to generate the item 1 cartridge cases. Item 2 and item 4 were compared to each other. Based on correspondence of firearm-related class characteristics and significant correspondence of individualizing characteristics, I determined that the item 2 and item 4 expended cartridge cases were fired in the same firearm.</p> <p>Sample 3 was shot with the same firearm as samples 1A, 1B and 1C. Samples 2 and 4 have been shot with the same firearm.</p>
A3TYNF	<p>Item 3 was identified microscopically as having been fired in the same firearm that reportedly fired the Item 1 test fires based on agreement of the combination of individual characteristics and all discernible class characteristics. Items 2 and 4 were microscopically eliminated as having been fired in the same firearm that reportedly fired the Item 1 test fires due to disagreement of discernible class characteristics. Item 5 was microscopically eliminated as having been fired in the same firearm that reportedly fired the Item 1 test fires due to disagreement of individual characteristics. Items 2 and 4 were identified microscopically as having been fired in the same unknown firearm based on agreement of the combination of individual characteristics and all discernible class characteristics. Items 2 and 4 were microscopically eliminated as having been fired in the same unknown firearm as Item 5 due to disagreement of discernible class characteristics. Items 2, 5, and the Item 1 test fires were imaged into the Integrated Ballistics Identification System (IBIS) / BrassTRAX database and any potential leads made from these entries will result in a notification. Test fires are being retained by the Firearms Identification Laboratory; all other evidence items are being returned.</p>
A646XN	<p>The four individually packaged cartridge cases, identified above as items 2, 3, 4, and 5, were microscopically compared to one another and to the test fired cartridge cases in item 1. Item 3 was identified as having been fired from the firearm used to produce the test fired cases in item 1 based on the agreement of all discernible class characteristics and agreement of individual detail. Items 2, 4, and 5 were eliminated from having been fired by the same firearm that fired the test fired cartridge cases contained in Item 1 based on class characteristic differences and a lack of individual detail agreement. Items 2, 4, and 5 were microscopically intercompared. The comparisons disclosed that Items 2, and 4 were fired in the same unknown firearm based on agreement of all discernible class characteristics and individual characteristic detail agreement. Item 5 was fired by a second unknown firearm.</p>
A9JJJA	<p>The comparative study carried out in the ballistic comparison microscope, between the incriminated 9 mm Luger calibre cartridge cases marked as two '2' and four '4', it is determined that there IS IDENTITY between them, that is to say, that they were fired by the same firearm. The comparative study carried out in the ballistics comparison microscope, between the incriminated 9 mm Luger calibre bullet marked as five '5' and the incriminated bullet cases marked as two '2' and four '4', it is determined that there is NO IDENTITY between them, that is, that the incriminated bullet case marked as five '5' was fired by a different firearm than the one that fired the incriminated bullet cases marked as two '2' and four '4'. The comparative study carried out in the ballistics comparison microscope, between the incriminated 9 mm Luger calibre bullet marked as three '3' and the incriminated bullet cases marked as two '2' and four '4', it is determined that there is NO IDENTITY between them, that is, that the incriminated bullet case marked as three '3' was fired by a different firearm than the one that fired the incriminated bullet cases marked as two '2' and four '4'. The comparative study carried out in the ballistic comparison microscope, between the incriminated 9 mm Luger calibre bullet marked as three '3' and the incriminated bullet marked as five '5', it is determined that there is NO IDENTITY between them, that is to say, that the incriminated bullet marked as five '5' was fired by a different firearm than the one that fired the</p>

TABLE 2

WebCode	Conclusions
	<p>incriminated bullet marked as three '3'. After a comparative study was carried out using the ballistic comparison microscope between the incriminating 9 mm Luger calibre bullet marked as three '3' and the standard bullet cases obtained from the 'TAURUS Millennium' model 'PT-111 Pro' pistol marked as one '1', it was determined that there IS IDENTITY between them, that is to say, that the 'TAURUS Millennium' model 'PT-111 Pro' pistol fired the incriminating bullet marked as three '3'. Having carried out the comparative study in the ballistic comparison microscope, between the incriminating 9 mm Luger calibre cartridge cases marked as '2' and '4', with the standard cartridge cases obtained from the 'TAURUS Millennium' model 'PT-111 Pro' pistol marked as one '1', it is determined that there is NO IDENTITY between them, it is determined that there is NO IDENTITY between them, that is to say, that the 'TAURUS Millennium' model 'PT-111 Pro' pistol did not hit the incriminated cases marked as two '2' and four '4'. The comparative study carried out in the ballistic comparison microscope, between the incriminating 9 mm Luger calibre cartridge case marked as five '5' and the standard cartridge cases obtained from the 'TAURUS Millennium' model 'PT-111 Pro' pistol marked as one '1', shows that there is NO IDENTITY between them, that is to say, that the 'TAURUS Millennium' model 'PT-111 Pro' pistol did not hit the incriminating cartridge case marked as five '5'.</p>
ABD4R3	<p>Item 3 fired cartridge case Identified as being fired by the same firearm that fired Item 1 Items 2 and 4 fired cartridge cases Identified as being fired by the same unknown firearm Items 2 and 4 fired cartridge cases Eliminated as being fired by the same firearm that fired Item 1 Item 5 fired cartridge case Eliminated as being fired by the firearms that fired Items 1 through 4 Comparison Conclusions Defined: Identification : Agreement of a combination of individual characteristics and all discernible class characteristics where the extent of agreement exceeds that which can occur in the comparison of toolmarks made by different tools and is consistent with the agreement demonstrated by toolmarks known to have been produced by the same tool. The significance of an identification is made to the practical, not absolute, exclusion of all other firearms/tools/fracture matches. Elimination : Significant disagreement of discernible class characteristics and/or individual characteristics</p>
ABPW83	<p>One (1) of the unknown 9mm calibre FCC's (that being Item 3) was identified as having been fired in the suspect firearm (Item 1) The other FCC's were eliminated, and were not discharged in the same firearm as Item 1.</p>
ADGWNL	<p>Visual and microscopic analyses of the evidence cartridge cases (item 2 through item 5) and the test fired cartridge cases from the Taurus Millennium PT-111 Pro firearm (item 1) were performed on 11/22/24, 11/25/24 and 12/4/24 and the results of the comparisons and evaluations are as follows: Based on agreement of discernible class characteristics and sufficient agreement of individual characteristics, Q2 (item 3) is identified as having been fired with the Taurus Millennium PT-111 firearm (item 1). Based on agreement of discernible class characteristics and sufficient agreement of individual characteristics, Q1 (item 2) and Q3 (item 4) are identified as having been fired with the same unknown firearm. Based on significant disagreement of individual characteristics, Q4 (Item 5) is excluded as having been fired with the same unknown firearm as Q1 (Item 2) and Q3 (Item 4). Based on significant disagreement of individual characteristics, Q1 (Item 2), Q3 (item 4) and Q4 (Item 5) are excluded as having been fired with the Taurus Millennium PT-111 Pro firearm (Item 1).</p>
AFHYB3	<p>Results: CARTRIDGE CASE COMPARISON: 1. Exhibit Item 2 with tests Item 1 1.1 Class characteristics were partially in agreement with significant difference in individual characteristics between the fired cartridge casing, exhibit Item 2 and the test fired cartridge casings, exhibits Item 1. 2. Exhibit Item 3 with tests Item 1 2.1 Class and individual characteristics were in agreement between the fired cartridge casing, exhibit Item 3 and the test fired cartridge</p>



TABLE 2

WebCode	Conclusions
ATV6M6	<p>casings, exhibits Item 1. 3. Exhibit Item 4 with tests Item 1 3.1 Class characteristics were partially in agreement with significant difference in individual characteristics between the fired cartridge casing, exhibit Item 4 and the test fired cartridge casings, exhibits Item 1. 4. Exhibit Item 5 with tests Item 1 4.1 Class characteristics were in agreement with significant differences in individual characteristics between the fired cartridge casing, exhibit Item 5 and the test fired cartridge casings, exhibits Item 1. Conclusions: 4.2 Exhibit Item 2, Item 4 and Item 5 were eliminated as having been fired in the same firearm as the test fired cartridge casings, Item 1. 4.3 Exhibit Item 3 was identified as having been fired in the same firearm as the test fired cartridge casings, Item 1.</p> <p>Item 3 was identified as having been fired by the same firearm that test fired item 1 based on agreement of all discernible class characteristics and sufficient agreement of individual characteristics. Items 2 and 4 were identified as having been fired by the same unknown firearm based on agreement of all discernible class characteristics and sufficient agreement of individual characteristics. Items 2 and 4 were eliminated as having been fired by the same firearm that test fired item 1 based on agreement of all discernible class characteristics but sufficient disagreement of individual characteristics. Item 5 was eliminated as having been fired by the same firearm that test fired item 1 based on agreement of all discernible class characteristics but sufficient disagreement of individual characteristics. Item 5 was eliminated as having been fired by the same unknown firearm that fired items 2 and 4 based on agreement of all discernible class characteristics but sufficient disagreement of individual characteristics.</p>
AWXVYB	<p>1. Exhibit 1 consists of three (3) fired cartridge cases and Exhibits 2, 3, 4, and 5 each consist of one (1) fired cartridge case. 2. Exhibits 1 through 5 are 9 mm Luger caliber marketed by Federal. Exhibit 1 was submitted by the provider (CTS) as test fires from a Taurus Millennium PT-111 Pro. 3. Microscopic comparisons of Exhibits 1 through 5 revealed: a. Exhibits 1 and 3 were fired from the same firearm due to sufficient agreement of individual characteristics. b. Exhibits 2 and 4 were fired from the same firearm due to sufficient agreement of individual characteristics. c. Exhibits 1 and 3 were not fired from the same firearm that fired Exhibits 2 and 4 due to disagreement of class and sufficient disagreement of individual characteristics. d. Exhibit 5 was not fired from the same firearm that fired Exhibits 2 and 4 due to disagreement of class and sufficient disagreement of individual characteristics. e. Exhibit 5 was not fired from the same firearm that fired Exhibits 1 and 3 due to sufficient disagreement of individual characteristics. TECHNICAL NOTES: Class characteristics are defined as measurable features of a firearm which indicate a restricted group source. They result from design features and are determined prior to manufacture of the firearm. Individual characteristics are defined as marks produced by the random imperfections or irregularities of firearm surfaces. These random imperfections or irregularities are produced incidental to manufacture and/or caused by use, corrosion, or damage, and are unique to that specific tool. Any conclusions indicating that a toolmark was made by a specific firearm are not to the absolute exclusion of all other firearms because it is not feasible to examine all possible firearms. However, observing this amount of agreement from a different source is considered extremely remote.</p>
AZX8VB	<p>1. Exhibit 1 consist of three 9mm Luger fired cartridge cases consistent with FC (Federal) marketing. 2. Exhibits 2 through 5 each consist of one 9mm Luger fired cartridge case consistent with FC (Federal) marketing. 3. Exhibit 1 (known) and Exhibits 2, 3, 4, and 5 (unknown) are suitable for microscopic comparison and were microscopically compared to each other. · Exhibit 3 was fired in the same firearm as Exhibit 1 due to agreement of class characteristics and sufficient agreement of individual characteristics. · Exhibit 4 was fired in the same firearm as Exhibit 2 due to agreement of class characteristics and sufficient agreement of individual characteristics. · Exhibits 2 and 4 were not fired in the same firearm as Exhibits 1 and</p>

TABLE 2

WebCode	Conclusions
	3 due to disagreement of class characteristics. · Exhibit 5 was not fired in the same firearm as Exhibits 1 and 3 due to sufficient disagreement of individual characteristics. · Exhibit 5 was not fired in the same firearm as Exhibits 2 and 4 due to disagreement in class characteristics.
B49LWM	Cartridge casing (3) and test-fired cartridge casings (1.1-1.3) are identified as having been discharged from the SAME gun based on the observed agreement of class characteristics and sufficient agreement of individual characteristics. Cartridge casings (2, 4) are identified as having been discharged from the SAME gun based on the observed agreement of class characteristics and sufficient agreement of individual characteristics. Cartridge casings (2, 4) are ELIMINATED as having been discharged from the same gun as cartridge casing (3) and test-fired cartridge casings (1.1-1.3) based on the observed disagreement of class characteristics. Cartridge casing (5) is ELIMINATED as having been discharged from the same gun as cartridge casing (3) and test-fired cartridge casings (1.1-1.3) based on the observed disagreement of individual characteristics. Cartridge casing (5) is ELIMINATED as having been discharged from the same gun as cartridge casings (2, 4) based on the observed disagreement of class characteristics.
B93HJT	The Item 1 and 3 cartridge cases were fired by the same firearm. The Item 2 and 4 cartridge cases were fired by the same firearm, but a different firearm than the Item 1 and 3 cartridge cases. The Item 5 cartridge case was fired by a different firearm than the Item 1 through 4 cartridge cases.
B9X7TB	Conclusions: The Item #3 cartridge case was identified as having been fired in the same firearm as the Item #1 test fire cartridge cases. Items #2 and #4 were identified as having been fired in the same unknown second firearm. Item #5 was identified as having been fired in an unknown third firearm.
BCY8ZZ	Item 3 was fired in the same firearm as the item 1 test fires. Items 2 and 4 were fired in a second firearm. Item 5 was fired in a third firearm.
BLMZAB	Item 1 (three test fired 9mm Luger caliber cartridges) and Item 3 (a 9mm Luger caliber cartridge case) were identified* as having been fired by the same firearm. Item 2 (a 9mm Luger caliber cartridge case) and Item 4 (a 9mm Luger caliber cartridge case) were identified* as having been fired by the same firearm. Item 1 and Item 3 were fired by a different firearm than Items 2 and 4. Item 1 and Item 3 were fired by a different firearm than Item 5 (a 9mm Luger caliber cartridge case). Item 5 was fired by a different firearm than Items 2 and 4. *Source identification is reached when the discernable class and individual characteristics have corresponding detail and the examiner would not expect to see the same arrangement of details repeated in another source.
BPPYPA	Cartridge case (Item 3) was discharged from the same firearm as the known expended cartridge cases (Item 1), based on observation on class and individual characteristics. Cartridge cases (Items 2, 4 and 5) were not fired from the same firearm.
BZL3QH	Items examined: Item 1: Three 9mm Luger cartridge cases (labeled 1A-1C) from firearm Item 2: a 9mm Luger cartridge case Item 3: a 9mm Luger cartridge case Item 4: a 9mm Luger cartridge case Item 5: a 9mm Luger cartridge case Cartridge case comparative examinations: Comparative examinations of Item 1 against Item 3 show the presence of corresponding features. This means that Item 1 & Item 3 are consistent with having been fired in the same firearm. * Comparative examinations of Items 2, 4 & 5 against Item 1 show the presence of different features. This means that Items 2, 4 & 5 were fired in different firearms than Item 1. Comparative examinations of Items 2 & 4 showed the presence of corresponding features. This means that Items 2 & 4 are consistent with having been fired in the same firearm. * Comparative examinations of Items 2 & 4 against Item 5 showed the presence of different

TABLE 2

WebCode	Conclusions
	features. This means that Items 2 & 4 were fired in a different firearm than Item 5. *Source identification is reached when the discernible class and individual characteristics have corresponding detail and the examiner would not expect to see the same arrangement of details repeated in another source.
C2W7ZZ	CARTRIDGE CASING COMPARISON: Results: 1. Class characteristics were in agreement between the fired cartridge casings marked item 1 to item 5. 2. Individual characteristics were in sufficient agreement between the fired cartridge casings marked item 1 and item 3. 3. Individual characteristics were in sufficient agreement between the fired cartridge casings marked item 2 and item 4 and were in sufficient disagreement and eliminated from item 1 and item 3. 4. Individual characteristics were in sufficient disagreement between the fired cartridge casing marked item 5 and the fired cartridge casings marked item 1 to item 4. Conclusions: 1. The cartridge casing marked item 3 was fired in the same firearm that fired the test-fired cartridge casings marked item 1, the first (1st) firearm. 2. The cartridge casing marked item 2 and item 4 were fired in a second (2nd) firearm. 3. The cartridge casing marked item 5 was fired in a third (3rd) firearm.
CHJPT2	The Item 3 cartridge case was identified, within the limits of practical certainty <sup>1</sup> , as having been fired by the same firearm that generated the Item 1 test fired cartridge cases. The Item 2, 4 and 5 cartridge cases were not fired by the same firearm that generated the Item 1 test fired cartridge cases. The Item 2 and 4 cartridge cases were identified, within the limits of practical certainty <sup>1</sup> , as having been fired by the same firearm. The Item 5 cartridge case was not fired by the same firearm that fired the Item 2 and 4 cartridge cases. Three different 9mm Luger calibre firearms are represented by the submitted cartridge cases.
CMUWWR	The fired cartridge cases in Submissions #1a and #1c were microscopically compared and identified as having been fired from the same unknown firearm based on sufficient agreement in individual characteristics present to conclude an identification. The fired cartridge cases in Submissions #1b and #1d were microscopically compared and identified as having been fired from the same unknown firearm based on sufficient agreement in individual characteristics present to conclude an identification. The fired cartridge cases in Submissions #1a and #1c were microscopically compared to the fired cartridge cases in Submissions #1b and #1d and were eliminated as having been fired from the same unknown firearm based on different class characteristics present. The fired cartridge case in Submission #1e was microscopically compared and eliminated as having been fired from the same unknown firearm as the cartridge cases in Submissions #1a through #1d based on different class characteristics present.
CPKYZU	The Items 01-01 and 01-03 cartridge cases were identified as having been fired in the same firearm. The Items 01-02 and 01-04 cartridge cases were eliminated as having been fired in the same firearm(s) as the Items 01-01, 01-03, and 01-05 cartridge cases. The Items 01-02 and 01-04 cartridge cases were identified as having been fired in the same unknown firearm that is capable of chambering and firing a 9mm Luger caliber cartridge. The Item 01-05 cartridge case was eliminated as having been fired in the same firearm(s) as the Items 01-01, 01-02, 01-03, and 01-04 cartridge cases. The Item 01-05 cartridge case was fired in an unknown firearm that is capable of chambering and firing a 9mm Luger caliber cartridge.
CRA9BG	Item #1: Three (3) fired cartridge cases, caliber 9mm Luger, hemispherical firing pin impression. Reported to be known samples from a suspect firearm (Taurus, Millennium PT-111 Pro, caliber 9mm Luger). Item #2: One (1) fired cartridge case, caliber 9mm Luger, hemispherical firing pin impression. Reported to be a questioned FCC. Item #3: One (1) fired cartridge case, caliber 9mm Luger, hemispherical firing pin impression. Reported to be a questioned FCC. Item #4: One (1) fired cartridge case, caliber 9mm Luger, hemispherical

TABLE 2

WebCode	Conclusions
	<p>firing pin impression. Reported to be a questioned FCC. Item #5: One (1) fired cartridge case, caliber 9mm Luger, hemispherical firing pin impression. Reported to be a questioned FCC. Conclusions: Item #3 was identified as having been fired in the same firearm as Item #1. Item #2 and Item #4 were identified as having been fired in the same firearm (not submitted). Item #5 was eliminated from being fired in the same firearm as Item #1, 2, 3, and 4 based on individual characteristics.</p>
CW3CW8	<p>An examination had been conducted with the comparison microscope, and we found a high level of correspondence between Item 1 and Item 3 in class characteristics. Further, Item 1 and Item 3 had the same individual characteristics. Item 3 was identified as having been fired from the same firearm as Item 1. Item 2, 4, 5 are different from Item 1 in class characteristics. Otherwise, we also found the same individual characteristics in Item 2 and item 4. Therefore, we had a conclusion that the Item 3 was fired from the suspect's firearm. Item 2, 4, 5 are not fired from suspect's handgun, and Item 2 and Item 4 are fired from same firearm.</p>
CXHQA9	<p>Fired cartridge case (Item 3) was microscopically identified as having been fired in firearm (Item 1). Fired cartridge cases (Item's 2 and 4) were identified as having been fired from the same unknown firearm, not Item 1. Fired cartridge case (Item 5) was eliminated from having been fired from firearm (Item 1) and unknown firearm (Item's 2 and 4).</p>
D4XR6C	<p>The submitted cartridge case, Item 3, was fired in the same firearm that fired Item 1. The submitted cartridge cases, Items 2 and 4, were fired in a second firearm, not in the same firearm that fired Item 1. The submitted cartridge case, Item 5, was fired in a third firearm, not in the same firearm that fired Items 1 and 3 or items 2 and 4. Associations and other results reported in this examination are based on the AFTE Theory of Identification and its Range of Conclusions. This basis enables opinions of common origin when unique surface contours of two toolmarks are in sufficient agreement.</p>
D4XUTV	<p>The cartridge case in Item 3 was fired in the same gun that fired the cartridge cases in Item 1, based on agreement observed in individual characteristics. The cartridge cases in Items 2 and 4 were not fired in the same gun that fired the cartridge cases in Item 1, based on differences observed in class characteristics. The cartridge case in Item 5 bears class characteristics consistent with the cartridge cases in Item 1. However, no significant similarities in individual characteristics were observed.</p>
D4YTL4	<p>Results of Examinations: Item 1 consists of three (3) 9mm Luger (9x19mm) cartridge cases that bear the headstamp of Federal ammunition, purportedly fired from the same firearm. Item 2 through Item 5 are four 9mm Luger cartridge cases that bear the headstamp of Federal ammunition. The Item 3 cartridge case was identified as having been fired in the same firearm as the Item 1 cartridge cases. The Item 2 and Item 4 cartridge cases were identified as having been fired in the same firearm, but due to a difference in class characteristics, were excluded as having been fired in the same firearm as the Item 1 cartridge cases. Due to a difference in class characteristics the Item 5 cartridge case was excluded as having been fired in the same firearm as the Item 1 cartridge cases or in the same firearm as the Item 2 and Item 4 cartridge cases.</p>
D8YUUD	<p>Upon request, a test fired cartridge case from Item 1 was microscopically examined and compared with a recovered fired cartridge case, Item 3. Based on the observed agreement of their class characteristics and sufficient agreement of their individual characteristics Item 3 is identified as having been fired in the same firearm as Item 1. Upon request, test fired cartridge cases from Item 1 were microscopically examined and compared with recovered fired cartridge cases, Items 2, 4 and 5. Based on the observed disagreement of some of their class characteristics, and differences observed in patterns of their individual characteristics, Items 2,</p>

TABLE 2

WebCode	Conclusions
	4 and 5 are eliminated as having been fired in the same firearm as Item 1.
DAP2B4	Exhibit 3 (questioned recovered cartridge case) was identified as having been fired in the same firearm as exhibit 1 (test-fired cartridge casings). Exhibits 2 and 4 (questioned recovered cartridge casings) were identified as having been fired in a second 9mm firearm. Suspect weapons are unknown at this time; however, any suspect weapon should be submitted for examination. Exhibit 5 (questioned recovered cartridge case) was fired in a third 9mm firearm. Suspect weapons are unknown at this time; however, any suspect weapon should be submitted for examination.
DAPXLZ	A microscopic examination of the Items revealed that the Items 1 and 3 were discharged in the same firearm. Further, the examination revealed that Items 2 and 4 were discharged in the same (second) firearm. The examination also revealed that Item 5 was discharge in a third firearm.
DDNC74	Exhibit 3 (questioned recovered cartridge case) was identified as having been fired in the same 9mm firearm as exhibit 1 (test-fired cartridge casings). Exhibits 2 and 4 (questioned recovered cartridge casings) were identified as having been fired in a second 9mm firearm. Suspect weapons are unknown at this time; however, any suspect weapon should be submitted to this laboratory for analysis. Exhibit 5 (questioned recovered cartridge case) was determined to have been fired in a third firearm. Suspect weapons are unknown at this time; however, any suspect weapon should be submitted to this laboratory for analysis.
DHEMJM	In my opinion, the fired casing, Q3 is identified as being fired from K1. In addition, the fired casings Q2 and Q4 are identified as being fired from a second 9mm pistol and Q5 is eliminated as being fired from K1 or the same firearm as Q2 and Q4.
DK7LWL	I microscopically compared Items 1A, 1B, and 1C to each other. I identified Items 1A, 1B, and 1C as being fired in the same firearm based on sufficient agreement of individual characteristics within the breech face marks and firing pin impression. I microscopically compared Item 2 to Items 1A, 1B and 1C. Item 2 can be eliminated from being fired in the same firearm as Items 1A, 1B, and 1C based on different class characteristics. I microscopically compared Item 3 to Items 1A, 1B, and 1C. I identified Item 3 as being fired in the same firearm as Items 1A, 1B, and 1C based on sufficient agreement of individual characteristics within the breech face marks and firing pin impression. I microscopically compared Item 4 to Items 1A, 1B and 1C. Item 4 can be eliminated from being fired in the same firearm as Items 1A, 1B, and 1C based on different class characteristics. I microscopically compared Item 5 to Items 1A, 1B and 1C. Item 5 can be eliminated from being fired in the same firearm as Items 1A, 1B, and 1C based on significant disagreement of individual characteristics. I microscopically compared Items 2 and 4 to each other. I identified Items 2 and 4 as being fired in a second firearm based on sufficient agreement of individual characteristics within the breech face marks and firing pin impression. I microscopically compared Items 2 and 4 to Item 5. Item 5 can be eliminated from being fired in the same firearm as Items 2 and 4 based on different class characteristics. Item 5 was fired in a third firearm.
DL4VTN	Items 2, 3, 4, 5: A microscopic comparison was conducted between Test Cartridge Case 1, Item 1 that was fired in the recovered firearm and Items 2, 3, 4 and 5. The examinations determined Item 3 was fired in the recovered firearm due to a sufficient agreement between the firing pin and breech face markings. The examinations determined Items 2, 4 and 5 were not fired in the recovered firearm, due to a disagreement of individual characteristics. A microscopic comparison was conducted between Items 2, 4 and 5. The examinations determined Items 2 and 4 were fired in the same firearm due to a sufficient agreement between

TABLE 2

WebCode	Conclusions
DLHFE8	<p>the firing pin and breech face markings. The examinations determined Item 5 was not fired in the same firearm as Items 2 and 4, due to a disagreement of individual characteristics. Disposition: The above listed evidence will be forwarded to the Property Custody Section.</p>
DNN6FV	<p>Item 3 was fired from the suspect's weapon Item 1 Item 2, Item 4, Item 5 weren't fired from the suspect's weapon Item 1 But, Item 2 and Item 4 were fired from the same firearm. Item 5 was fired from the another firearm.</p> <p>The Item 3 fired cartridge case was fired in the same firearm as the Item 1 test fired cartridge cases. Item 1 is described by the submitting agency as test fires from the suspect's Taurus Millennium PT-111 Pro firearm. This identification is based on sufficient agreement of the combination of individual characteristics and all discernible class characteristics. The Items 2, 4, and 5 fired cartridge cases were not fired in the same firearm as the Item 1 test fired cartridge cases. These eliminations are based on differences in class and individual characteristics. The Items 2 and 4 fired cartridge cases were fired in the same unknown firearm. This identification is based on sufficient agreement of the combination of individual characteristics and all discernible class characteristics. The Item 5 fired cartridge case was not fired in the same unknown firearm as Items 2 and 4. This elimination is based on differences in class characteristics.</p>
DQWXU3	<p>Item 3 cartridge case has sufficient agreement of individual marks for identification with knowns Item 1. Conclusion: Item 3 was fired in the suspect Taurus Millenium firearm. Items 2 and 4 has sufficient agreement of individual marks for identification with each other. Conclusion: Items 2 and 4 were fired in a single firearm, not the suspect firearm. Item 5 has different class marks to Items 1, 2, 3 and 4. Conclusion: Item 5 was fired in a third firearm.</p>
E3KJFN	<p>The test fired cartridge cases marked #1 were examined and microscopically compared to the discharged cartridge case marked #3 with positive results (identification). The discharged cartridge case marked #3 was discharged in the same firearm as item #1. The test fired cartridge cases marked #1 were examined and microscopically compared to the three (3) discharged cases marked #2, #4, and #5 with negative results (Elimination). The discharged cartridge cases marked #2, #4, and #5 were not discharged in the same firearm as item #1. The discharged cartridge case marked #2 was examined and microscopically compared to the discharged cartridge case marked #4 with positive results (Identification). The discharged cartridge case marked #4 was discharged in the same unknown firearm as item #2. The discharged cartridge case marked #2 was examined and microscopically compared tot he discharged cartridge case marked #5 with negative results (Elimination). The discharged cartridge case marked #5 was not discharged in the same unknown firearm as item #4.</p>
E4UNN7	<p>As a result of microscopic comparison, Item 3 and Item 1 test fired cartridge cases were identified as having been fired in the same firearm. As a result of microscopic comparison, Items 2 and 4 were identified as having been fired in the same unknown firearm. As a result of microscopic comparison, Item 3 and Item 1 test fired cartridge cases were eliminated as having been fired in the same firearm that fired Items 2 and 4 and Item 5 based on disagreement of discernable class and/or individual characteristics. As a result of microscopic comparison, Items 2 and 4 were eliminated as having been fired in the same firearm that fired Item 5 based on disagreement of discernable class and/or individual characteristics.</p>
E7EHL8	<p>1. Questioned cartridge case, Item 3, was discharged from the same firearm as the known tested-fired cartridge casings. 2. Questioned cartridge cases, item 2 and item 4, were fired from the same firearm, but from a different firearm than the known tested casings and item 3. 3. Questioned cartridge case, Item 5, was discharged from a different weapon than the other known tested-fired and questioned cartridge casings Item 2 ,3 and 4.</p>



TABLE 2

WebCode	Conclusions
EA3R2Z	Item 3 was identified as having been fired in the same firearm as Item 1. A comparison of Item 5 to Item 1 was inconclusive. Item 5 could not be eliminated as having been fired in the same firearm as Item 1. Item 5 has agreement of all discernible class characteristics with some disagreement of individual characteristics, but insufficient for an elimination. Items 2 and 4 were eliminated as having been fired in the same firearm as Item 1 or Item 5 based on a difference in class characteristics. Items 2 and 4 were identified as having been fired in the same unknown firearm
EBT9V9	SUMMARY OF RESULTS AND INTERPRETATIONS Item 1.1-1.5: The expended casings were originally components of Federal brand 9mm caliber cartridges. A Microscopic examination and comparison of Items 1.1 through 1.5 revealed the following: Based on the observed agreement of their class characteristics and sufficient agreement of their individual characteristics, Items 1.1 and 1.3 are identified as having been fired in the same firearm. Based on the observed agreement of their class characteristics and sufficient agreement of their individual characteristics, Items 1.2 and 1.4 are identified as having been fired in a second unknown firearm. Based on the observed disagreement of class characteristics with Item 1.2 & 1.4, and the observed disagreement of individual characteristics with 1.1, Item 1.5 is identified as having been fired in a third unknown firearm.
EC7RV6	Item 3 was fired in Item 1 based on agreement of all class characteristics and sufficient agreement of individual characteristics (identification). Items 2 and 4 were not fired in Item 1 based on a significant disagreement of class and individual characteristics (elimination). Item 5 was not fired in Item 1 based on agreement of class characteristics but significant disagreement of individual characteristics (elimination). Items 2 and 4 were not fired in the same unknown firearm as Item 5 based on a significant disagreement of class and individual characteristics (elimination).
EG38PM	One questioned recovered cartridge casing (Item 3) was discharged from the same firearm as the known test-fired cartridge casings (Item 1). Three other questioned recovered cartridge casings (Items 2, 4, 5) were NOT discharged from the same firearm as the known test-fired cartridge casings (Item 1).
EHFYG4	Part I: Examined the three specimens marked #1-1, #1-2, and #1-3. They are 9mm Luger caliber discharged cartridge cases, headstamped FC. Examined the specimen marked #3. It is a 9mm Luger caliber discharged cartridge case, headstamped FC. The cartridge case marked #3 was microscopically compared to the three cartridge cases marked #1-1, #1-2, and #1-3 and identified as having been discharged in the same firearm. Part II: Examined the two specimens marked #2 and #4. They are 9mm Luger caliber discharged cartridge cases, headstamped FC. The two cartridge cases marked #2 and #4 were microscopically compared and identified as having been discharged in the same firearm. The two cartridge cases marked #2 and #4 were microscopically compared to the cartridge case listed in Part I and were eliminated as having been discharged in the same firearm. Part III: Examined the specimen marked #5. It is a 9mm Luger caliber discharged cartridge case, headstamped FC. The cartridge case marked #5 was microscopically compared to the cartridge cases listed in Part I and Part II and eliminated as having been discharged in the same firearms.
EJ9UZ7	As a result of physical and microscopic examination of this evidence and the provided test-fires, it is my opinion that: A. Item 1-3 was fired from the same weapon which produced the test-fires submitted as Item 1-1. "IDENTIFICATION." B. Item 1-2 and Item 1-4 were both fired from the same unknown weapon capable of chambering and firing 9mm Luger caliber ammunition. "IDENTIFICATION." This unknown weapon is NOT the same weapon which produced the test-fires submitted as Item 1-1, nor the weapon which produced Item 1-5. "EXCLUSION." C. Item 1-5 was fired from an unknown weapon capable of chambering and firing 9mm Luger

TABLE 2

WebCode	Conclusions
	caliber ammunition.
EKEEN7	The Exhibit 3 cartridge case was identified as having been fired in the same firearm as the Exhibit 1 cartridge cases. The Exhibit 2 and 4 cartridge cases were identified as having been fired in the same firearm. The Exhibit 2 and 4 cartridge cases were excluded as having been fired in the same firearm as the Exhibit 1 cartridge cases. The Exhibit 5 cartridge case was excluded as having been fired in the same firearm as the Exhibit 1 cartridge cases. The Exhibit 2 and 4 cartridge cases were excluded as having been fired in the same firearm as the Exhibit 5 cartridge case.
EM939M	A microscopic comparison was conducted between Test cartridge case #1 through #3, Item #1 and Items #2, #3, #4 and #5. The examinations determined that Item #3 was fired from the same firearm as Item #1 due to a sufficient agreement between firing pin and breech face impressions. The examinations determined that Items #2, #4 and #5 were not fired in the same firearm as Item #1 due to a disagreement between the firing pin and breech face impressions. A microscopic comparison was conducted between Items #2, #4 and #5. The examinations determined that Items #2 and #4 were fired in the same firearm due to a sufficient agreement between firing pin and breech face impressions. The examinations determined that Item #5 has a disagreement between the firing pin and breech face impressions with Items #2 and #4; therefore, Item #5 was fired in a different firearm than Items #2 and #4.
EPUMDQ	Item 3 was fired in the same firearm as Item 1 (identification). This is also the opinion of Firearms Examiner NAME. Items 2, 4, and 5 were not fired in the same firearm as Item 1 (elimination). This is also the opinion of Firearms Examiner NAME. Items 2 and 4 were fired in the same firearm (identification). This is also the opinion of Firearms Examiner NAME. Item 5 was not fired in the same firearm as Items 2 and 4 (elimination). This is also the opinion of Firearms Examiner NAME. Items 2 and 4 could have been fired in a 9mm Luger firearm produced or marketed by manufacturers listed in Appendix X. Item 5 could have been fired in a 9mm Luger firearm produced or marketed by manufacturers listed in Appendix Y. [Appendices not included.]
ERMJZY	<b>RESULTS AND CONCLUSIONS:</b> The following results and conclusions are based upon direct analysis, measurements, and examination by the reporting scientist and reviewed by the scientist performing the technical and administrative review. Cartridge Case Analysis: Methodology: Physical (Visual Examination); Microscopy (Comparison Microscope). Items 3, the cartridge case, was fired in Item 1, the Taurus pistol, based upon corresponding class and individual microscopic characteristics. Items 2 and 4, the cartridge cases, were fired in the same firearm based upon corresponding class and individual microscopic characteristics. Items 2 and 4, the cartridge cases, were not fired in the same firearm as Item 5, the cartridge case, based upon different class and individual microscopic characteristics. Items 2 and 4, the cartridge cases, were not fired in Item 1, the Taurus pistol, based upon different class characteristics. Item 5, the cartridge case, was not fired in Item 1, the Taurus pistol, based upon different individual microscopic characteristics. Digital photographs/digital video imaging of identifications and/or exclusions of comparisons can be made available upon request for judicial proceedings. Evidence in this case will be returned to the investigative agency.
EUR4T7	The submitted items 2 and 4 were microscopically examined and compared to each other; they were positively identified as having been fired in same firearm. The submitted items 2 and 4 were microscopically examined and compared to test-fired cartridge cases recovered from the submitted firearm 1; they were eliminated as having been fired in the submitted firearm 1. The submitted item 3 was microscopically examined and compared to test-fired cartridge cases recovered from the submitted firearm 1; it was positively identified as having been fired in the



TABLE 2

WebCode	Conclusions
	submitted firearm 1. The submitted item 5 was microscopically examined and compared to test-fired cartridge cases recovered from the submitted firearm 1; it was eliminated as having been fired in the submitted firearm 1.
EZV8FJ	A microscopic examination and comparison of the evidence described above revealed the following: Cartridge casing (3) and Known Test fired cartridge casings (1.1 - 1.3) are IDENTIFIED as having been discharged from the SAME gun based on the observed agreement of their class characteristics and sufficient agreement of their individual characteristics. Cartridge casings (2, 4) are IDENTIFIED as having been discharged from the SAME gun based on the observed agreement of their class characteristics and sufficient agreement of their individual characteristics. Cartridge casings (2,4) are ELIMINATED as having been discharged from the same gun as Cartridge casing (3) and Known Test fired cartridge casings (1.1 - 1.3) based on the observed disagreement of class characteristics. Cartridge casing (5) is ELIMINATED as having been discharged from the same gun as Cartridge casing (3) and Known Test fired cartridge casings (1.1 - 1.3) based on the observed disagreement of individual characteristics. Cartridge casing (5) is ELIMINATED as having been discharged from the same gun as Cartridge casings (2, 4) based on the observed disagreement of class characteristics.
EZVCT7	Item 3 and Item 1 exhibit similar class characteristics. As a result of microscopic comparison, it was concluded that Item 3 and Item 1 were identified as having been fired in the same firearm. Item 2 and Item 4 exhibit similar class characteristics. As a result of microscopic comparison, it was concluded that Item 2 and Item 4 were identified as having been fired in the same (second) firearm. Item 5 was not fired in the same firearm as Items 1 through 4.
F3FJRU	Item 3 was identified as having been fired by the same firearm as Item 1. This identification is based on the agreement of class characteristics, and individual characteristics observed in the breechface impression marks and firing pin impression marks. Items 2, 4, and 5 were eliminated as having been fired by the same firearm as Item 1. This elimination is based on the disagreement of individual characteristics observed in the breechface impression marks and firing pin impression marks. Items 2 and 4 were identified as having been fired by the same unknown firearm. This identification is based on the agreement of class characteristics, and individual characteristics observed in the breechface impression marks and firing pin impression marks. Item 5 was eliminated as having been fired by the same unknown firearm as Items 2 and 4. This elimination is based on the disagreement of individual characteristics observed in the breechface impression marks and firing pin impression marks.
FACC39	By the microscopy examination of the expended cartridge obtained from the crime scene, it was determined that they were divided into three groups due to their surface property characteristics as (Item 1 and Item 3), (Item 2 and item 4) and (Item 5) .
FADBZM	Item 1 consists of three (3) fired 9mm Luger caliber cartridge cases that were each given an additional character for differentiation (1a, 1b, and 1c). The Item 1 cartridge cases were identified as having been fired in the same known firearm due to agreement of class and sufficient agreement of individual characteristics. Item 3 was identified as having been fired in the same known firearm as the Item 1 cartridge cases due to agreement of class characteristics and sufficient agreement of individual characteristics. Items 2 and 4 were identified as having been fired in the same unknown firearm due to agreement of class characteristics and sufficient agreement of individual characteristics. Items 2 and 4 were not fired in the same known firearm as Items 1 and 3 due to significant disagreement of individual characteristics. Item 5 was not fired in the same known firearm as Items 1 and 3 due to significant disagreement of individual characteristics. Item 5 was not fired in the same unknown firearm as Items 2 and 4 due to significant disagreement of individual characteristics.

TABLE 2

WebCode	Conclusions
FKU3H7	Item 1: Present ballistic correlation with Item 3
FMLUWW	<p>1. The microscopic comparison of the samples found insufficient agreement of class and individual characteristics within the firing pin impression and breachface markings between the test fired cartridge cases (Item 1) and the exhibit (Item 2), with notable disagreement of both class and individual markings. Thus, in my opinion, Item 2 was not discharged in the same firearm as Item 1. 2. The microscopic comparison of the samples found sufficient agreement of class and individual characteristics within the firing pin impression and breachface markings between the test fired cartridge cases (Item 1) and the exhibit (Item 3), to form the opinion that the cartridge cases were discharged in the same firearm. 3. The microscopic comparison of the samples found insufficient agreement of class and individual characteristics within the firing pin impression and breachface markings between the test fired cartridge cases (Item 1) and the exhibit (Item 4), with notable disagreement of both class and individual markings. Thus, in my opinion, Item 2 was not discharged in the same firearm as Item 1. 4. The microscopic comparison of the samples found sufficient agreement of class, however insufficient agreement of individual characteristics within the firing pin impression and breachface markings between the test fired cartridge cases (Item 1) and the exhibit (Item 5), and some notable disagreement of markings. Thus, in my opinion, Item 5 was not discharged in the same firearm as Item 1. 5. The microscopic comparison of the samples found sufficient agreement of class and individual characteristics within the firing pin impression and breachface markings between the exhibit fired cartridge case (Item 2) and the exhibit fired cartridge case (Item 4), to form the opinion that the cartridge cases were discharged in the same firearm.</p>
FPU8GJ	<p>Through macroscopic/microscopic examination and based on agreement of discernible class characteristics and sufficient corresponding individual detail, the fired 9mm caliber cartridge cases, Laboratory Items 1 and 3, were identified as having been fired in the same firearm. Through macroscopic/microscopic examination and based on agreement of discernible class characteristics and sufficient corresponding individual detail, the fired 9mm caliber cartridge cases, Laboratory Items 2 and 4, were identified as having been fired in the same firearm. Based on macroscopic/microscopic examination, the fired 9mm caliber cartridge case, Laboratory Item 5, exhibits similar class characteristics as those displayed on the fired 9mm caliber cartridge cases, Laboratory Items 1 and 3. However, due to the lack of reproducibility of this item, Laboratory Item 5 could not be eliminated as having been fired in the same firearm as the fired 9mm caliber cartridge cases, Laboratory Items 1 and 3. The results of these examinations are inconclusive. Through macroscopic/microscopic examination and based on significant disagreement of class characteristics, the fired 9mm caliber cartridge cases, Laboratory Items 1, 3, and 5 could not have been fired in the same firearm as the fired 9mm caliber cartridge cases, Laboratory Items 2 and 4.</p>
FVE69D	The cartridge case from Item 3 was discharged by the same firearm as the known test-fired cartridge casings (Item 1).
G8PY2H	<p>Cartridge casing (3) and test fires (1.1, 1.2, 1.3) are identified as having been discharged from the same gun based on the observed agreement of their class characteristics and sufficient agreement of their individual characteristics. Cartridge casings (2, 4) are identified as having been discharged from the same gun based on the observed agreement of their class characteristics and sufficient agreement of their individual characteristics. Cartridge casings (2, 4) are eliminated as having been discharged from the same gun as cartridge casing (3) and test fires (1.1, 1.2, 1.3) based on the observed disagreement of class characteristics. Cartridge casing (5) is eliminated as having been discharged from the same gun as cartridge casings (2, 4) based on the observed disagreement of class characteristics. Cartridge casing (5) is eliminated as having been discharged from the same gun as cartridge casing (3) and test fires</p>

TABLE 2

WebCode	Conclusions
	(1.1, 1.2, 1.3) based on the observed disagreement of individual characteristics.
G9LAWK	Items 1, 2, 3, 4 and 5: A microscopic comparison was conducted between Test Cartridge Cases # 1 through 3, that were fired in Item 1 and Items 2, 3, 4 and 5. The examinations determined that Item 3 was fired in the firearm, Item 1, due to a sufficient agreement between the firing pin and breech face markings. The examinations determined Item 2, 4 and 5 were not fired in the firearm, Item 1, due to a disagreement of individual characteristics. A microscopic comparison was conducted between Items 2, 4 and 5. The examinations determined that Items 2 and 4 were fired in the same firearm due to a sufficient agreement between the firing pin and breech face markings. The examinations determined that Item 5 was fired in a different firearm than Items 2 and 4 due to a disagreement of individual characteristics. Items 2, 4 and 5 could have been fired in any make firearm designed to chamber such a caliber/type cartridge. .... The above listed items will be forwarded to the Property Custody Division. .... All firearm comparison examinations were conducted using the AFTE's (Association of Firearm & Tool Mark Examiners) Theory of Identification. Identifications are the opinion of a qualified examiner that two tool marks were made by the same tool based on sufficient agreement of individual characteristics. The agreement of individual characteristics is of a quantity and quality that the likelihood another (different) tool could have made the mark is so remote as to be considered a practical impossibility. All exclusions and inconclusive findings were based upon exemplars available at the time of the examinations.
GFJ6VJ	Items 2 to 5 were all fired cartridge cases in 9x19mm calibre. Microscopic comparison was conducted on Item 2 against the test fired cartridge case in Item 1 which showed that they were not discharged in the same firearm. Microscopic comparison was conducted on Item 3 against the test fired cartridge case in Item 1 which showed that they were discharged in the same firearm. Microscopic comparison was conducted on Item 4 against the test fired cartridge case in Item 1 which showed that they were not discharged in the same firearm. Microscopic comparison was conducted on Item 5 against the test fired cartridge case in Item 1 which showed that they were not discharged in the same firearm. To conclude, Item 1 and Item 3 were both discharged in the suspect's firearm. Items 2, 4 and 5 were not discharged in the suspect's firearm.
GJGNWW	The 9mm Luger calibre Taurus Millennium PT-111 Pro semi-automatic pistol, as represented by the Item 1 agency generated test fired cartridge cases was identified, within the limits of practical certainty <sup>1</sup> , as having fired the Item 3 cartridge case however, was excluded as having fired the Item 2, 4, and 5 cartridge cases. (See Attribution) The Item 2 and 4 cartridge cases were identified, within the limits of practical certainty <sup>1</sup> , as having been fired by the same firearm. There are three (3) firearms represented by the Item 2 to 5 cartridge cases.
GQ2LL6	The Exhibit 1 and 3 fired cartridge cases were identified as having been fired in the same firearm. (Source Identification). The Exhibit 2 and 4 fired cartridge cases were identified as having been fired in the same firearm. (Source Identification). The Exhibit 2 and 4 fired cartridge cases were excluded as having been fired in the same firearm as Exhibits 1, 3, and 5. (Source Exclusion). The Exhibit 5 fired cartridge case was excluded as having been fired in the same firearm as Exhibit 1 and 3 and Exhibit 2 and 4. (Source Exclusion).
GRVEE3	The microscopic comparison is carried out between the study casings and standard casings obtained from the pistol-type firearm, Taurus Brand, Model Millennium PT-111 Pro, caliber 9mm received as evidence, reaching the following conclusions: 1) The item 3 casing presents correspondence of percussion impressions with individualizing value that are present in the 3 casings in Item 1, so it is determined that it was struck by the same firearm. 2) The casings listed as Item 2, 4 and 5 present different percussion ballistic characteristics than those observed in the casings listed as Item 1 and 3. 3) The study caps listed as Item 2 and 4 present

TABLE 2

WebCode	Conclusions
	correspondence of percussion impressions with each other. 4) All the casings received as an indicative study correspond to the 9mm caliber.
H4KNK9	Items 2, 3, 4 and 5 were inter-compared and compared to test fires from Item 1. Item 3 was identified as having been fired in Item 1. Items 2, 4, and 5 were compared. Items 2 and 4 were identified as having been fired from the same unknown firearm. Item 5 was eliminated to Items 2 and 4.
H4YDJE	ITEM 3 WAS DISCHARGED FROM THE SUSPECT'S PISTOL ITEM 1 ITEM 2 AND ITEM 4 WERE DISCHARGED FROM THE SAME PISTOL, DIFFERENT FROM SUSPECT'S FIREARM. ITEM 5 WAS DISCHARGED FROM THE OTHER PISTOL
H4YHW3	The Exhibit 1 and Exhibit 3 cartridges case were identified as having been fired in the same firearm. (Source Identification). The Exhibit 2 and Exhibit 4 cartridges case were identified as having been fired in the same firearm. (Source Identification). The firearm that fired the Exhibit 2 and 4 cartridge cases was excluded as having fired the Exhibit 1 and 3 cartridge cases. (Source Exclusion). The firearm that fired the Exhibit 5 cartridge case was excluded as having fired the Exhibit 1, 2, 3 and 4 cartridge cases. (Source Exclusion).
HD9JH3	The Exhibit 1 and 3 cartridge cases were identified as having been fired in the same firearm. (Source identification). The Exhibit 2, 4, and 5 cartridge cases were excluded as having been fired in the same firearm that fired the Exhibit 1 and 3 cartridge cases. (Source exclusion). The Exhibit 2 and 4 cartridge cases were identified as having been fired in the same firearm. (Source identification). The Exhibit 5 cartridge case was excluded as having been fired in the same firearm that fired the Exhibit 2 and 4 cartridge cases. (Source exclusion).
HGTDE4	The item 3 present ballistic correlation whit the percussion casing caliber 9mm Luger (Item 1), related to this same case number: Test No. 24-5262. Three percussion casings caliber 9 millimeters Luger problem, identified as exhibits 2, 4 and 5, do not present ballistic correlation with the witness elements related to this same case number: Test No. 24-5262.
HH74LM	Examinations showed that Item 3 was discharged from the same firearm as the known test fired cartridge cases. Examinations showed that Item 2, Item 4, and Item 5 were not discharged from the same firearm as the known test fired cartridge cases.
HH74N8	One of the 9mm Luger cartridge cases recovered from the scene (Item 3) was fired in the same firearm as the three 9mm Luger cartridges fired in the Taurus Millennium PT-111 Pro (Item 1). The remaining 9mm Luger cartridge cases recovered from the scene (items 2, 4, and 5) were not fired in the same firearm as the three 9mm Luger cartridges fired in the Taurus Millennium PT-111 Pro (Item 1). Items 2 and 4 were fired in the same firearm. Item 5 was fired in a different firearm than items 2 and 4.
HL6EJ8	Item 3 was fired in the same firearm as the known test-fired cartridge cases (Item 1). Items 2 and 4 were fired in the same firearm; they were not fired in the firearm that fired the known test-fired cartridge cases (Item 1) or the firearm that fired Item 5. Item 5 was not fired in the firearm that fired the known test-fired cartridge cases (Item 1). The four questioned 9mm Luger cartridge cases (Items 2 through 5) were microscopically compared to each and to test-fired cartridge cases discharged from the suspect's firearm (Item 1). Item 3 was identified as having been fired in the same firearm as the known test-fired cartridge cases (Item 1) based on agreement of all observable class characteristics and sufficient corresponding individual detail observed in breechface marks and the firing pin impression. These cartridge cases show indications of subclass carryover potential; the identification was made assuming that the marks were not subject to subclass carryover and were individual in nature. Items 2 and 4 were identified as having been fired in the same firearm based on agreement of all observable class characteristics and sufficient corresponding individual detail observed in firing pin aperture

TABLE 2

WebCode	Conclusions
	marks and the firing pin impression. Items 2 and 4 were eliminated as having been fired in the same firearm as the known test-fired cartridge cases (Item 1) based on disagreement of class characteristics observed in firing pin aperture marks and ejector marks as well as disagreement of individual detail observed in the firing pin impression. Items 2 and 4 were eliminated as having been fired in the same firearm as Item 5 based on disagreement of class characteristics observed in firing pin aperture marks and ejector marks as well as disagreement of individual detail observed in the firing pin impression. Item 5 was eliminated as having been fired in the same firearm as the known test-fired cartridge cases (Item 1) based on disagreement of class characteristics observed in breechface marks and ejector marks as well as disagreement of individual detail observed in the firing pin impression.
HL6G8Q	The cartridge case in Item 3 was fired in the same gun that fired the cartridge cases in Item 1, based on agreement observed in individual characteristics. The cartridge cases in Items 2 and 4 were not fired in the gun that fired the cartridge cases in Item 1, based on differences observed in class characteristics. The cartridge case in Item 5 bears no significant similarities in individual characteristics with the cartridge cases in Item 1.
HQVPU7	1. The recovered cartridge casing, identified as item 3, belongs to a 9x19 mm caliber and was fired by the same firearm that generated item 1. 2. The recovered cartridge casings, identified as items 2 and 4 belong to a 9x19 mm caliber and were fired by a same firearm, different than the one that generated item 1. 3. The recovered cartridge casing, identified as items 5 belong to a 9x19 mm caliber, was fired by a different firearm that generated item 1 and a different firearm that generated items 2 and 4.
HVU66E	The questioned items and necessary firearm test fires were microscopically analyzed and the results of the comparison and evaluation are as follows: The cartridge case Q2 (Item 3) was identified as having been fired with the K1 (Item 1) firearm. The cartridge cases Q1 (Item 2) and Q3 (Item 4) were identified as having been fired with the same unknown firearm. A conclusion of identification (fired) is based on an analyst's determination that all discernible class and individual characteristics agree such that the extent of agreement exceeds that which has been demonstrated by toolmarks known to have been made by different tools (Known Non-Matches) and is consistent with the agreement demonstrated by toolmarks known to have been made by the same tool (Known Matches). The cartridge cases Q1 (Item 2), Q3 (Item 4) and Q4 (Item 5) were excluded as having been fired with K1 (Item 1) based on sufficient disagreement of individual characteristics. The cartridge case Q2 (Item 3) was excluded as having been fired with the same firearm as cartridge case Q4 (Item 5) based on sufficient disagreement of individual characteristics. The cartridge cases Q1 (Item 2) and Q3 (Item 4) were excluded as having been fired with the same firearms as cartridge cases Q2 (Item 3) and Q4 (Item 5) based on sufficient disagreement of individual characteristics. A conclusion of exclusion is based on an analyst's determination that the observed characteristics of the items in question were marked by different tools.
HYN7Z2	Item 3 was identified as having been fired in the same firearm as Items 1 Items 2 and 4 were identified as having been fired in the same firearm but eliminated as having been fired in the same firearm as Items 1 and 3. Item 5 was eliminated as having fired in the same firearm as Items 1 through 4.
J3MXRY	The set of three fired cartridge cases from item #1 can be indexed and matched to each other with reproducing firing pin and breech face marks. Item #3 exhibits the same matching firing pin and breech face marks as item #1. The quality and quantity of matching microscopic detail supports that they originated from the same source firearm. This opinion meets the category of identification using the AFTE guidelines. Item #2 and #4 are eliminated from firearm #1 due to significant difference in the firing pin and breech face appearance. Items #2 and #4 do

TABLE 2

WebCode	Conclusions
J74ZY4	<p>exhibit matching microscopic detail to each other supporting they were two discharges from a second firearm (not gun #1). Item #5 is eliminated from item #1 and items #2/#4 and represents a third different 9mm Luger pistol in the set of unknown samples.</p>
J79HX3	<p>Compared test fires from 9mm Taurus semi-automatic pistol serial number xxx against the shell marked #3 with positive results. The shell marked #3 was identified as having been discharged in the item #1 Taurus pistol. (1st Gun) Compared test fires from 9mm Taurus semi-automatic pistol serial number xxx against the three shells marked #2, #4, and #5 with negative results. The three shells marked #2, #4, and #5 were eliminated as having been discharged in the item #1 Taurus pistol. Compared shell casings marked #2 and #4 against each other with positive results. the two shells marked #2 and #4 were identified as having been discharged in the same firearm. (NOT THE ITEM #1 Taurus pistol.) (2nd gun) Shell casing marked #5 eliminated against test fires from Item #1 Taurus and the three shells marked #2, #3, and #4. (3rd gun)</p>
J79HX3	<p>Items 1 through 5 were microscopically compared with the following results: Items 2 and 4 were identified as having been fired in the same firearm however were eliminated as having been fired by the submitted firearm (item 1). Item 3 was identified as having been fired by the submitted firearm (item 1). Item 5 was determined to be inconclusive to the test fires (item 1). Although there was a agreement and disagreement observed there was a lack for a conclusive result.</p>
J7LDZL	<p>The four 9mm Luger caliber cartridge cases (1A to 1C, 3) were identified as having been fired in the same unknown firearm. The four 9mm Luger caliber cartridge cases (1A to 1C, 3) were eliminated as having been fired in the same firearm as the other three 9mm Luger caliber cartridge cases (2, 4, 5). The two 9mm Luger caliber cartridge cases (2, 4) were identified as having been fired in the same unknown firearm. The two 9mm Luger caliber cartridge cases (2, 4) were eliminated as having been fired in the same firearm as the other 9mm Luger caliber cartridge case (5). The 9mm Luger caliber CC (5) is suitable for comparison.</p>
J99TPW	<p>Items 001-01A through 001-01C are Federal brand 9mm Luger caliber fired cartridge cases reportedly test fired from the suspect's firearm, a Taurus Millennium PT-111 Pro. Items 001-02 through 001-05 are Federal brand 9mm Luger caliber fired cartridge cases recovered from the scene. I microscopically compared Item 001-02 through 001-05 to each other and to a test fired cartridge case. I observed agreement of all discernable class characteristics with sufficient agreement of individual characteristics to conclude Item 001-03 was fired by the same firearm that was reportedly used to produce the test fires, a Taurus Millennium PT-111 Pro. I observed agreement of all discernable class characteristics with sufficient agreement of individual characteristics to conclude Items 001-02 and 001-04 were fired by a second firearm. Due to significant disagreement of class and individual characteristics, I concluded Item 001-5 was fired by a third firearm.</p>
JLZJAZ	<p>On October 22, 2024, [Name] of the [Laboratory] Quality Assurance Section delivered the following to this section for examination: 1-1 Three (3) 9mm Luger caliber discharged cartridge casings (1-1 A, B, C) head stamped "FC 9MM LUGER" (test-fired cartridge casings discharged from Taurus Millenium PT-111 Pro firearm). 1-2 One (1) 9mm Luger caliber discharged cartridge casing head stamped "FC 9MM LUGER". 1-3 One (1) 9mm Luger caliber discharged cartridge casing head stamped "FC 9MM LUGER". 1-4 One (1) 9mm Luger caliber discharged cartridge casing head stamped "FC 9MM LUGER". 1-5 One (1) 9mm Luger caliber discharged cartridge casing head stamped "FC 9MM LUGER". After physical and microscopic examination of all submitted evidence against test fires (Items 1-1 A,B C) and to each other, it is my opinion that: A/ The discharged cartridge casing mentioned above in Item 1-3 was fired by the Taurus Millenium PT-111 Pro firearm. "IDENTIFICATION" B/ The</p>



TABLE 2

WebCode	Conclusions
	<p>discharged cartridge casings mentioned above in Items 1-2 and 1-4 were fired by the same unknown weapon capable of chambering and firing 9mm Luger caliber ammunition. Due to a disagreement of individual microscopic markings, Items 1-2 and 1-4 were not fired by the Taurus Millennium PT-111 Pro firearm. "IDENTIFICATION AND EXCLUSION". C/ The discharged cartridge casing mentioned above in Item 1-5 was fired by and unknown weapon capable of chambering and firing 9mm Luger caliber ammunition. Due to a disagreement of individual microscopic markings, Item 1-5 was not fired by the unknown weapon that fired Items 1-2 and 1-4 or the Taurus Millennium PT-111 Pro firearm. "EXCLUSION".</p>
JNNVBR	<p>Item 3 was fired in the same firearm as the item 1 test fires. Items 2 and 4 were fired in a second firearm. Item 5 was fired in a third firearm.</p>
JTXD4	<p>The cartridge case marked item 3 matched the known cartridges therefore the cartridge case was fired in the same firearm that fired the known cartridge cases.</p>
K27ZXE	<p>Item # 1A, 1B &amp; 1C: 03-9MM Lug Cal FC, WP discharged ctge casings 24-336H1A, H1B &amp; H1C (Test specimens from a 9mm Lug Cal Taurus, Millennium PT111 Pro pistol). Item # 2, 3, 4 &amp; 5: 04-9MM Lug Cal FC, WP discharged ctge casings 24-336H2, H3, H4 &amp; H5.</p> <p>Microscopic Examination: The above listed evidence was examined and compared to each other with the following results. Source Identification: Items #1A, 1B, 1C &amp; 3 were microscopically examined and compared. Based on the observed agreement of their class characteristics and sufficient agreement of individual characteristics, items # 1A, 1B, 1C &amp; 3 are all identified as having been fired by the 9MM Lug Cal Taurus Millennium PT111 Pro pistol. Source Identification: Items #2 &amp; 4 were microscopically examined and compared. Based on the observed agreement of their class characteristics and sufficient agreement of individual characteristics, items # 2 &amp; 4 are both identified as having been fired by one gun. Source Exclusion: Items # 1A, 1B, 1C, 2, 3, 4 &amp; 5 were microscopically examined and compared. Based on the disagreement of class and or individual characteristics, items # 1A, 1B, 1C &amp; 3 are eliminated as having been fired by the same firearm as item # 2, 4 &amp; 5. Source Exclusion: Items # 1A, 1B, 1C, 2, 3, 4 &amp; 5 were microscopically examined and compared. Based on the disagreement of class and or individual characteristics, items # 2 &amp; 4 are eliminated as having been fired by the same firearm as 1A, 1B, 1C, 3 &amp; 5. Source Exclusion: Items # 1A, 1B, 1C, 2, 3, 4 &amp; 5 were microscopically examined and compared. Based on the disagreement of class and or individual characteristics, item # 5 is eliminated as having been fired by the same firearm as 1A, 1B, 1C, 2, 3 &amp; 4. NOTE: Processing of the above listed evidence has been completed. The evidence will be retained in the open case file of the [Laboratory]. Qualifying Statements: Source Identification: 'Source identification' is an examiner's conclusion that two toolmarks originated from the same source. This conclusion is an examiner's decision that all observed class characteristics are in agreement and the quality and quantity of corresponding individual characteristics is such that the examiner would not expect to find that same combination of individual characteristics repeated in another source and has found insufficient disagreement of individual characteristics to conclude they originated from different sources. The basis for a 'source identification' conclusion is an examiner's decision that the observed class characteristics and corresponding individual characteristics provide extremely strong support for the proposition that the two toolmarks came from the same source and extremely weak support for the proposition that the two toolmarks came from different courses. A 'source identification' is the statement of an examiner's opinion (an inductive inference) that the probability that the two toolmarks were made by different sources is so small that it is negligible. A 'source identification' is not based upon a statistically-derived or verified measurement or an actual comparison to all firearm or toolmarks in the world. Source Exclusion: 'Source exclusion' is an examiner's conclusion that</p>

TABLE 2

WebCode	Conclusions
K72UVF	<p>two toolmarks did not originate from the same source. The basis for a 'source exclusion' conclusion is an examiner's decision that two toolmarks can be differentiated by their class characteristics and /or individual characteristics. Inconclusive: 'Inconclusive' is an examiner's conclusion that all observed class characteristics are in agreement but there is insufficient quality and/or quantity of corresponding individual characteristics such that the examiner is unable to identify or exclude the two toolmarks as having originated from the same source. The basis for an 'inconclusive' conclusion is an examiner's decision that there is an insufficient quality and/or quantity of individual characteristics to identify or exclude. Reasons for an 'inconclusive' conclusion include the presence of microscopic similarity that is insufficient to form the conclusion of 'source identification'; a lack of any observed microscopic similarity; or microscopic dissimilarity that is insufficient to form the conclusion of 'source exclusion.'</p> <p>Through macroscopic/microscopic examination and based on agreement of discernible class characteristics and sufficient corresponding individual detail, the fired 9mm caliber cartridge cases, Laboratory Items 1 and 3, were identified as having been fired in the same firearm. Through macroscopic/microscopic examination and based on agreement of discernible class characteristics and sufficient corresponding individual detail, the fired 9mm caliber cartridge cases, Laboratory Items 2 and 4, were identified as having been fired in the same firearm. Based on macroscopic/microscopic examination, the fired 9mm caliber cartridge case, Laboratory Item 5, exhibits similar class characteristics as those displayed on the fired 9mm caliber cartridge cases, Laboratory Items 1 and 3. However, due to the lack of reproducibility of this item, Laboratory Item 5 could not be eliminated as having been fired in the same firearm as Laboratory Items 1 and 3. The results of these examinations are inconclusive. Through macroscopic/microscopic examination and based on significant disagreement of class characteristics, the fired 9mm caliber cartridge cases, Laboratory Items 1, 3, and 5 could not have been fired in the same firearm as the fired 9mm caliber cartridge cases, Laboratory Items 2 and 4.</p>
K7GXLZ	<p>ESPAÑOL: Por lo tanto, los casquillos testigos marcados como uno 1 individualizados como 1D, 2D, 3D (en sus cuerpos) y el casquillo marcado como indicio tres 3, individualizado como "5D" (en su cuerpo) fueron percutidos por el arma de fuego Taurus Millennium PT-111 Pro de la posesión de un sospechoso. El casquillo marcado como indicio dos 2, individualizado como "4D" (en su cuerpo) y el casquillo problema marcado como cuatro 4 individualizados como 6D (en su cuerpo) fueron percutidos por una misma arma de fuego desconocida. El casquillo remitido marcado como cinco 5, individualizado como 7D," (en su cuerpo), no presentó características individuales con los casquillos testigos marcados como uno 1 individualizados como 1D, 2D, 3D (en sus cuerpos), ni con los casquillos marcados como indicio dos 2, individualizado como "4D" (en su cuerpo), indicio tres 3, individualizado como "5D" (en su cuerpo) y cuatro 4 individualizados como 6D (en su cuerpo). Por lo que fue percutido por otra arma de fuego desconocida. Los casquillos remitidos marcados como indicio uno 1 individualizados como 1D, 2D, 3D (en sus cuerpos) dos 2, individualizado como "4D" (en su cuerpo), tres 3, individualizado como "5D" (en su cuerpo), cuatro 4 individualizados como 6D (en su cuerpo) y cinco 5, individualizado como 7D," (en su cuerpo), fueron percutidas por tres 3 armas de fuego distintas. ENGLISH Therefore, the witness casings marked as one 1, individualized as 1D, 2D, 3D (on their bodies) and the casing marked as indication three 3, individualized as "5D" (on their body) were hit by the Taurus Millennium PT-111 Pro from the possession of a suspect. The casing marked as an indication of two 2, identified as "4D" (on his body) and the problem casing marked as four 4, identified as 6D (on his body) were shot by the same unknown firearm. The sent casing marked as five 5, individualized as 7D," (on its body), did not present individual characteristics with the witness casings marked as one 1, individualized as 1D, 2D, 3D (on its bodies), nor with the casings</p>



TABLE 2

WebCode	Conclusions
	marked as clue two 2, individuated as "4D" (on your body), clue three 3, individuated as "5D" (on your body) and four 4s individuated as 6D (on his body). Therefore, he was hit by another unknown firearm. The casings sent marked as evidence one 1 individualized as 1D, 2D, 3D (on their bodies) two 2, individualized as "4D" (on their body), three 3, individualized as "5D" (on their body), four 4 individualized as 6D (on his body) and five 5s, individualized as 7D," (on his body), were shot by three different firearms.
K96PCW	Comparison microscope examinations were conducted on the evidence Exhibits 1-5. The findings of this examiner are the following: Exhibit 1 and Exhibit 3 were fired with the same firearm (suspect's weapon) based on sufficient agreement of individual characteristics present. (Firearm #1). Exhibit 2 and Exhibit 4 were fired with the same unknown firearm based on sufficient agreement of individual characteristics present (Firearm #2). Exhibit 5 was not fired with the same firearm that fired Exhibit 1 through Exhibit 4 due to the differences in individual characteristics present. (Firearm #3). No further analysis was conducted on the submitted evidence at this time.
K9P8W7	Results of Examinations: Items 1 through 5 consist of seven (7) 9mm Luger cartridge cases bearing the headstamp of Federal Ammunition. The Item 3 cartridge case was identified as having been fired in the same firearm as the Item 1 cartridge cases. Due to a difference in class characteristics, the Item 2, 4, and 5 cartridge cases were excluded as having been fired in the same firearm as the Item 1 cartridge cases. The Item 2 cartridge case was identified as having been fired in the same firearm as the Item 4 cartridge case. Due to a difference in class characteristics, the Item 2 and 4 cartridge cases were excluded as having been fired in the same firearm as the Item 5 cartridge case.
KG3KAV	The Item 3 cartridge case was Identified to the Item 1 cartridge cases. The Item 2 and 4 cartridge cases were Identified to each other and Eliminated from the Item 1 and 3 cartridge cases. The Item 5 cartridge case was Eliminated from the Item 1 and 3 cartridge cases and Eliminated from the Item 2 and 4 cartridge cases.
KKZ2PB	The 9mm Luger cartridge case Q2 (Item 3) was identified as having been fired with the Taurus Millennium PT111 Pro 9mm Luger K1 (Item 1) firearm. The two 9mm Luger cartridge cases Q1 (Item 2) and Q3 (Item 4) were identified as having been fired with the same unknown firearm. The three 9mm Luger cartridge cases Q1 (Item 2), Q3 (Item 4), and Q4 (Item 5) were excluded as having been fired with the Taurus Millennium PT111 Pro 9mm Luger K1 (Item 1) firearm based on sufficient disagreement of individual characteristics. The 9mm Luger cartridge case Q4 (Item 5) was excluded as having been fired with the same firearm(s) as the two 9mm Luger cartridge cases Q1 (Item 2) and Q3 (Item 4) based on sufficient disagreement of individual characteristics.
KTCV7X	Examined the specimens marked #2 through #5. They are 9mm Luger caliber discharged cartridge cases, headstamped FC. Examined the three test standards marked #1. They are 9mm Luger caliber discharged cartridge cases headstamped FC. The cartridge case marked #3 was compared microscopically against the test standards marked #1 and was identified as having been discharged in the same firearm. The two cartridge cases marked #2 and #4 were compared microscopically and were identified as having been discharged in the same firearm. They were compared microscopically against the test standards marked #1 and were eliminated as having been discharged in the same firearm. The cartridge case marked #5 was compared against the test standards marked #1 and was eliminated as having been discharged in the same firearm as the test standards marked #1 and the cartridge cases marked #2 and #4.
KVJBD4	Item 3 was fired from the suspect's weapon Item 1 Item 2, Item 4, Item 5 weren't fired from the

TABLE 2

WebCode	Conclusions
	suspect's weapon Item 1 But, Item 2 and Item 4 were fired from the same firearm. Item 5 was fired from the another firearm.
KVJDZM	Items – Description/Visual Examination: Item 1: Three (3) fired 9mm caliber cartridge cases, reportedly test fired from suspect's firearm Items 2-5: Four (4) fired 9mm caliber cartridge cases MICROSCOPIC COMPARISON CONCLUSIONS: Identification: Based upon the reproducibility of class characteristics and microscopic individual characteristics, the following identifications were made: Lab Item #; Evidence Type; Conclusion: 3 Fired cartridge case Fired in the same firearm as Item 1 (reported TF's) 2 & 4 (2) Fired cartridge case; Fired in the same firearm; Elimination: Based upon the difference in individual characteristics, the following eliminations were made: Lab Item #; Evidence Type; Conclusion: 5 Fired cartridge case Not fired in the same firearm as Items 1 or 3 Based upon the difference in class characteristics, the following eliminations were made: Lab Item #; Evidence Type; Conclusion: 5 Fired cartridge case Not fired in the same firearm as Items 2 or 4.
KVYJHX	ACCORDING TO WHAT WAS OBSERVED IN THE COMPARATIVE STUDY OF THE RELATED CARTRIDGE TYPES, IDENTITY IS APPRECIATED BETWEEN SAMPLE ITEM 1 AND SAMPLE ITEM 3.
L8PQWE	1. The questioned recovered cartridge casing(Item 3) was discharged from the suspect's firearm. 2. The questioned recovered cartridge casings(Item 2, 4 & 5) were not discharged from the suspect's firearm. 3. The questioned recovered cartridge casings(Item 2 & 4) were discharged from the same another firearm.
LFGBUY	The expended cartridge cases contained in laboratory evidence items 1.1 were microscopically compared to the cartidge cases contained in laboratory items 1.2-1.5 with the following results. Laboratory evidence items 1.1 and 1.3 were all identified as having been fired from the same firearm. Laboratory items 1.2, 1.4 and 1.5 were excluded as having been fired from the same firearm as item 1.1. The expended cartridge cases contained in laboratory evidence items 1.2, 1.4, and 1.5 were microscopically compared to each other with the following results. Laboratory evidence items 1.2 and 1.4 were all identified as having been fired from the same firearm. Laboratory items 1.2 and 1.5 were excluded as having been fired from the same firearm. Note: The cartridge cases contained in laboratory item 1.1 were reportedly fired from a Taurus Millennium PT 111 Pro.
LFLNKG	Item 1.1 consists of three fired Federal brand 9mm Luger cartridge cases stated to have been fired by a Taurus brand 9mm Luger pistol, model Millennium PT-111 Pro. Items 1.2, 1.3, 1.4 and 1.5 are four fired Federal brand 9mm Luger cartridge cases. They were microscopically compared to each other and to the cartridge cases from Item 1.1 and the results are as follows: Based on agreement of all discernible class characteristics and corresponding individual detail in the breech face marks, Item 1.3 was identified as having been fired by the same firearm that fired Item 1.1. Based on disagreement in class characteristics, Items 1.2, 1.4 and 1.5 were eliminated as having been fired by the same firearm that fired Item 1.1. Based on agreement of all discernible class characteristics and corresponding individual detail in the breech face marks, Item 1.2 was identified as having been fired by the same firearm that fired Item 1.4. Based on disagreement of class characteristics in the breech face marks, Item 1.5 was eliminated as having been fired by the same firearm that fired Items 1.2 and 1.4.
LFLRTX	The cartridge case from the Item 3 wears similar characteristics as the 3 expended cartridge cases discharged from the suspect weapon. So the catridge case from Item 3 was fired in the seized firearm (Item 1). On the other hand, the 3 cartridge cases from the Items 2, 4 and 5 wear different characteristics than those from the suspect weapon. So they weren't fired in the seized firearm. However we can see that the cartridge cases from Item 2 and Item 4 wear

TABLE 2

WebCode	Conclusions
	similar characteristics. They were fired in a same firearm. In conclusion: Cartridge case from Item 3 was fired in the seized firearm, as the cases from Item 1. Cartridge cases from Item 2 and Item 4 were fired in a second one. Cartridge case from Item 5 was fired in a third firearm.
LH939Q	In my opinion, - The exhibit Taurus Millennium PT-111 Pro firearm discharged Fired Cartridge Case '3,' - A second (unknown) firearm discharged Fired Cartridge Cases '2' and '4,' and - A third (unknown) firearm discharged Fired Cartridge Case 5.
LL9BEM	Items – Description/Visual Examination: Item 1: Three (3) fired 9mm caliber cartridge cases, reportedly recovered from a Taurus Millennium PT-111 Pro semi-automatic pistol. Items 2 thru 5: Four (4) fired 9mm caliber cartridge cases. Microscopic Comparison Conclusions Identification Based upon the reproducibility of class characteristics and microscopic individual characteristics, the following identifications were made: Item # 3: one (1) fired cartridge case was fired in Item 1 (Taurus pistol). Items # 2 & 4: two (2) fired cartridge cases were fired in the same firearm. Elimination Based upon the difference in individual characteristics, the following eliminations were made: Item # 5: one (1) fired cartridge case was not fired in Item 1 (Taurus pistol). Based upon the difference in class characteristics, the following eliminations were made: Item # 5: one (1) fired cartridge case was not fired in the same firearm as Items 2 & 4 (fired cartridge cases).
LLA9PH	Item #3 was microscopically examined and compared to Item #1 (agency test fire). Based on the observed agreement of their class characteristics and sufficient agreement of their individual characteristics, Item #3 is identified as having been fired in the same firearm as Item #1 (agency test fire). Items #2, #4, and #5 were microscopically examined and compared to Item #1 (agency test fire). Based on the observed disagreement of individual characteristics, Items #2, #4, and #5 are eliminated as having been fired in the same firearm as Item #1 (agency test fire).
LX22TY	ACCORDING TO THE ANALYSIS, IDENTIFICATION 3 WAS SHOT BY THE FIREARM.
M48QDR	Item 3 was fired in the Taurus firearm. Items 2 and 4 were fired in the same firearm but not the Taurus firearm. Item 5 was not fired in either the Taurus firearm or the same firearm as Items 2 and 4.
MAAWRV	Exhibit 3 (questioned recovered cartridge case) was identified as having been fired in the same 9mm firearm as exhibit 1 (test fired cartridge casings). Exhibits 2 and 4 (questioned recovered cartridge casings) were identified as having been fired in a second 9mm firearm. Suspect weapons are unknown at this time; however, any suspect weapon should be submitted to the laboratory for analysis. Exhibit 5 (questioned recovered cartridge case) was identified as having been fired in a third 9mm firearm. Suspect weapons are unknown at this time; however, any suspect weapons should be submitted to the laboratory for analysis.
MDCXTR	Item 3 was microscopically identified as having been fired in the same firearm as the Item 1 test fires. Items 2 and 4 were microscopically identified as having been fired in a second unknown firearm. Item 5 was fired in a third unknown firearm.
MEK8MA	A microscopic examination and comparison of the evidence described above revealed the following: Cartridge casing (3) and Known Test-Fired Cartridge casings (1.1-1.3) are identified as having been discharged from the SAME gun based on the observed agreement of their class characteristics and sufficient agreement of their individual characteristics. Cartridge casings (2, 4) are identified as having been discharged from the SAME gun based on the observed agreement of their class characteristics and sufficient agreement of their individual characteristics. Cartridge casings (2, 4) are ELIMINATED as having been discharged from the same gun as Cartridge casing (3) and Known Test-Fired Cartridge casings (1.1-1.3) based on the observed disagreement of class characteristics. Cartridge casing (5) is ELIMINATED as

TABLE 2

WebCode	Conclusions
	having been discharged from the same gun as Cartridge casing (3) and Known Test-Fired Cartridge casings (1.1-1.3) based on the observed disagreement of individual characteristics. Cartridge casing (5) is ELIMINATED as having been discharged from the same gun as Cartridge casings (2, 4) based on the observed disagreement of class characteristics.
MFFQNC	The observations in terms of markings left by the firearm on the cartridges strongly support the hypothesis of Item 1 and Item 3 being discharged by the same firearm. The observations on Item 2, 4 and 5 support the other hypothesis of them being discharged by a different firearm than Items 1. Items 2 and 4 display similar markings, thus might have been shot in the same weapon.
MGUXCE	1) Examinations showed that the cartridge case listed as Item 3 was discharged within the firearm that discharged Item 1. 2) Examinations showed that the cartridge cases listed as Item 2, Item 4, and Item 5 were not discharged within the firearm that discharged Item 1.
MJGUFX	1- All cartridge items (1,2,3,4 and 5) are 9mm. 2- Item 3 discharge from suspect (item 1). 3- Item 2 and item 4 discharged from same weapon but not discharged from item 1. 4- Item 5 discharged from deferent weapon and not discharged from item 1.
MVUUB7	Comparative examinations of Item 3 (one 9mm Luger caliber cartridge case) against Item 1 (three 9mm Luger caliber cartridge cases marked Item 1A, 1B, & 1C said to have been fired from suspect firearm; a Taurus Millennium PT-111 Pro), show the presence of corresponding features. This means that Item 3 and Item 1 are consistent with having been fired in the same firearm. * Comparative examinations of Items 2 and 4 (two 9mm Luger caliber cartridge cases) showed the presence of corresponding features. This means that Items 2 and 4 are consistent with having been fired in the same firearm.* Comparative examinations of Items 2 and 4 against Item 1 show the presence of different features. This means that Items 2 and 4 were not fired in the same firearm used to fire Item 1. Comparative examinations of Item 5 against Item 1 show the presence of different features. This means that Item 5 was not fired in the same firearm used to fire Item 1. *Source identification is reached when the discernible class and individual characteristics have corresponding detail and the examiner would not expect to see the same arrangement of details repeated in another source.
MXXRJD	Items 1, 2, 3, 4, 5: A microscopic comparison was conducted between Test Cartridge Case # 1, Item 1 and Item 3. The examinations determined that Item 1 and 3 were fired in the same firearm, due to a sufficient agreement between the firing pin and breech face markings. Item 2 was compared microscopically to Item 4 and were found to have sufficient agreement between firing pin and breech face markings; therefore, Items 2 and 4 were fired in the same firearm. Test Cartridge Case # 1, Item 1 was compared microscopically to Items 2 and 4 and were found to have a disagreement of individual characteristics; therefore, Items 2 and 4 were not fired in the same firearm as Item 1. Test Cartridge Case # 1, Item 1 was compared microscopically to Item 5 and was found to have a disagreement of individual characteristics; therefore, Item 5 was fired in a different firearm than Item 1. Item 5 was compared microscopically to Items 2 and 4 and were found to have a disagreement of individual characteristics; therefore, Item 5 was fired in a different firearm than Items 2 and 4. .... Disposition: The above listed evidence will be held in the Firearms Section. .... All firearm comparison examinations were conducted using the AFTE's (Association of Firearm & Tool Mark Examiners) Theory of Identification. Identifications are the opinion of a qualified examiner that two tool marks were made by the same tool based on sufficient agreement of individual characteristics. The agreement of individual characteristics is of a quantity and quality that the likelihood another (different) tool could have made the mark is so remote as to be considered a practical impossibility. All exclusions and inconclusive findings were based upon exemplars available at the time of the examinations.

TABLE 2

WebCode	Conclusions
MZNTMG	Item 1 (known TFs) consists of three (3) cartridge cases that were each given the additional characters of A, B, and C for differentiation. Items 1A, 1B, 1C, and 3 were identified as having been fired in the same firearm due to agreement of class characteristics and sufficient agreement of individual characteristics. Items 2 and 4 were identified as having been fired in the same unknown firearm due to agreement of class characteristics and sufficient agreement of individual characteristics. Items 2 and 4 were not fired in the same firearm as Items 1A, 1B, 1C, and 3 due to significant disagreement of individual characteristics. Item 5 was not fired in the same firearm as Items 1A, 1B, 1C, and 3 due to significant disagreement of individual characteristics. Item 5 was not fired in the same unknown firearm as Items 2 and 4 due to significant disagreement of individual characteristics.
N7A72A	A microscopic examination and comparison of the evidence described above revealed the following: Cartridge casing (3) is IDENTIFIED as having been discharged from the SAME gun as Known Test Fired Cartridge casings (1.1, 1.2, 1.3) based on the observed agreement of their class characteristics and sufficient agreement of their individual characteristics. Cartridge casings (2,4) are IDENTIFIED as having been discharged from the SAME gun based on the observed agreement of their class characteristics and sufficient agreement of their individual characteristics. Cartridge casing (5) is ELIMINATED as having been discharged from the same gun as Cartridge casing (3) and Known Test Fired Cartridge casings (1.1, 1.2, 1.3) based on the observed disagreement of individual characteristics. Cartridge casings (2,4) are ELIMINATED as having been discharged from the same gun as Cartridge casing (3) and Known Test Fired Cartridge casings (1.1, 1.2, 1.3) based on the observed disagreement of class characteristics. Cartridge casings (2,4) are ELIMINATED as having been discharged from the same gun as Cartridge casing (5) based on the observed disagreement of class characteristics.
NBK4PW	Item 1 is three (3) 9mm Luger fired cartridge cases reportedly fired in the Taurus Millennium PT-111 pistol. Items 2, 3, 4 and 5 are 9mm Luger fired cartridge cases. The tests in Item 1 were compared with the fired cartridge cases in Items 2, 3, 4 and 5 using a comparison microscope with the following results: The fired cartridge case in Item 3 was identified as having been fired in Item 1, the Taurus Millennium PT-111 pistol. The fired cartridge cases in Exhibits 2, 4 and 5 were eliminated as being fired in Item 1. Items 2 and 4 were identified to being fired in the same firearm, a second firearm. Item 5 was eliminated as being fired in the firearm that fired Items 2 and 4. Item 5 was fired in a third firearm.
NBNJ4H	Lab Items #1 (test-fired cartridge cases from: Taurus Millennium PT-111 Pro), #2 (one FC {Federal} 9mm Luger test-fired cartridge case), #3 (one FC {Federal} 9mm Luger test-fired cartridge case), #4 (one FC {Federal} 9mm Luger test-fired cartridge case), and #5 (one FC {Federal} 9mm Luger test-fired cartridge case) were examined and microscopically compared on 11/04/2024. Based on agreement of all discernable class characteristics and sufficient agreement of individual characteristics, Lab Item #3 (one Federal 9mm Luger fired cartridge case) was positively identified as having been fired in the same firearm as Lab Item #1 (test-fired cartridge cases from: Taurus Millennium PT-111 Pro). Based on agreement of all discernable class characteristics and sufficient agreement of individual characteristics, Lab Items #2 (one Federal 9mm Luger fired cartridge case) and #4 (one Federal 9mm Luger fired cartridge case) were positively identified as having been fired in the same firearm. Based on disagreement of class and individual characteristics, Lab Items #2 (one Federal 9mm Luger fired cartridge case) and #4 (one Federal 9mm Luger fired cartridge case) were eliminated as having been fired in the same firearm as Lab Items #1 (test-fired cartridge cases from: Taurus Millennium PT-111 Pro) and #3 (one FC {Federal} 9mm Luger test-fired cartridge case). Based on disagreement of class and individual characteristics, Lab Item #5 (one Federal 9mm

TABLE 2

WebCode	Conclusions
	Luger fired cartridge case) was eliminated as having been fired in the same firearm as Lab Items #1 (test-fired cartridge cases from: Taurus Millennium PT-111 Pro) and #3 (one FC {Federal} 9mm Luger test-fired cartridge case) and Lab Items #2 (one FC {Federal} 9mm Luger test-fired cartridge case) and #4 (one FC {Federal} 9mm Luger test fired cartridge case).
NJGYTL	Item 3 was fired in the same firearm as the item 1 test fires. Items 2 and 4 were fired in a second firearm. Item 5 was fired in a third firearm.
NJUL7U	The questioned recovered cartridge casing, item 3, was discharged from the same firearm as the known test-fired cartridge casing (item1) The questioned recovered cartridge casing, item 2, 4 and 5, were not discharged from the same firearm as the known test-fired cartridge casing (item1)
NKP7VE	Item 3 was microscopically compared with Item 1, finding correspondence of class characteristics and individual distinguishing characteristics. It was concluded that Item 3 was fired by the same firearm as the Item 1 cartridge cases. Items 2 and 4 were microscopically intercompared, finding class and individual distinguishing characteristic correspondence. It was concluded that Items 2 and 4 were fired by the same firearm (firearm not submitted). Items 2, 4, and 5 were microscopically compared with Item 1, finding class characteristic and significant individual characteristic differences. It was concluded that Items 2, 4, and 5 were not fired by the same firearm as the Item 1 cartridge cases. Items 2 and 4 were microscopically compared to Item 5, finding class characteristic differences. It was concluded that Item 2 and Item 4 were not fired by the same firearm as the Item 5 cartridge case (firearms not submitted).
NMDKKP	1. Item 2 was eliminated as having been fired in the exhibit Taurus Millennium PT-111 Pro, 9mm Luger calibre, self-loading pistol. 2. Item 3 was identified as having been fired from the exhibit firearm Taurus Millennium PT-111 Pro, 9mm Luger calibre, self-loading pistol. 3. Item 4 was eliminated as having been fired in the exhibit Taurus Millennium PT-111 Pro, 9mm Luger calibre, self-loading pistol. 4. Item 2 and item 4 were identified as having been fired in the same firearm. 5. Item 5 was eliminated from having been fired in the exhibit Taurus Millennium PT-111 Pro, 9mm Luger calibre, self-loading pistol and the firearm that fired Item 2 and 4.
NMG6CX	In my opinion, the fired cartridge case (item) 3 had been fired in the recovered Taurus pistol, represented by the test-fired control cartridge cases (item) 1. I designated this pistol "Gun 1". In my opinion, the cartridge cases (items) 2 and 4 had been fired in a second, different, self-loading pistol. I designated this pistol "Gun 2". In my opinion, the fired cartridge case (item) 5 had been fired in a further, different self-loading pistol, which i have designated "Gun 3".
NVN4GT	Exhibit 3 (questioned recovered cartridge case) was identified as having been fired in the same 9mm firearm as exhibit 1 (test fired cartridge casings). Exhibits 2 and 4 (questioned recovered cartridge casings) were identified as having been fired in a second 9mm firearm. Suspect weapons are unknown at this time; however, any suspect weapon should be submitted to the laboratory for analysis. Exhibit 5 (questioned recovered cartridge case) was identified as having been fired in a third 9mm firearm. Suspect weapons are unknown at this time; however, any suspect weapon should be submitted to the laboratory for analysis.
P7KEKU	The microscopic comparison from the pistol-type firearm, Taurus Brand, Model Millennium PT-111 Pro, caliber 9mm received as evidence, reaching the following conclusions: 1) The item 3 casing presents correspondence of percussion impressions with individualizing value that are present in the 3 casings in Item 1, so it is determined that it was struck by the same firearm. 2) The casings listed as Item 2, 4 and 5 present different percussion ballistic characteristics than those observed in the casings listed as Item 1 and 3. 3) The study caps listed as Item 2



TABLE 2

WebCode	Conclusions
	and 4 present correspondence of percussion impressions with each other. 4) All the casings received as an indicative study correspond to the 9mm caliber.
PCQZFH	Items A1-1, A1-2, A1-3, A1-4, and A1-5 are consistent in class characteristics with each other. Items A1-1, A1-2, A1-4 and A1-5 exhibit similar class characteristics; however, microscopic examination revealed sufficient differences in individual characteristics to eliminate items A1-2, A1-4 and A1-5 as having been fired in the same firearm as A1-1. Items A1-1 and A1-3, 9mm Luger caliber cartridge cases were identified as having been fired in the same firearm. No firearm was submitted. Items A1-2 and A1-4, each a 9mm Luger caliber cartridge cases were identified as having been fired in the same firearm. No firearm was submitted. An Identification conclusion is based on an examiner's determination that all discernible class and individual characteristics agree such that the extent of agreement exceeds that which has been demonstrated by toolmarks made by different tools and is consistent with the agreement demonstrated by toolmarks known to have been made by the same tool.
PCRYRY	Item 3 has been fired by the suspect's firearm (Taurus Millennium). Items 2 and 4 have been fired by a different firearm (questioned or unknown firearm). Item 5 has been fired by yet another unknown firearm, different from the previous two firearms. In total, there are three different firearms (one known and two unknown).
PEXFNA	Through macroscopic/microscopic examination and based on agreement of discernible class characteristics and sufficient corresponding individual detail, the fired 9mm caliber cartridge cases, Laboratory Items 1 and 3, were identified as having been fired in the same firearm. Through macroscopic/microscopic examination and based on agreement of discernible class characteristics and sufficient corresponding individual detail, the fired 9mm caliber cartridge cases, Laboratory Items 2 and 4, were identified as having been fired in the same firearm. Through macroscopic/microscopic examination and based on significant disagreement of class characteristics, the fired 9mm caliber cartridge cases, Laboratory Items 2 and 4, could not have been fired in the same firearm as the fired 9mm caliber cartridge cases, Laboratory Items 1 and 3. Through macroscopic/microscopic examination and based on significant disagreement of class characteristics, the fired 9mm caliber cartridge case, Laboratory Item 5, could not have been fired in the same firearm as the fired 9mm caliber cartridge cases, Laboratory Items 2 and 4. Based on macroscopic/microscopic examination, the fired 9mm caliber cartridge case, Laboratory Item 5, exhibits similar class characteristics as those displayed on the fired 9mm caliber cartridge cases, Laboratory Items 1 and 3. However, due to the lack of reproducibility of this item, Laboratory Item 5 could not be eliminated as having been fired in the same firearm as the fired 9mm caliber cartridge cases, Laboratory Items 1 and 3. The results of these examinations are inconclusive.
PGLTPZ	Results of Examinations: Item 1 contains three known test-fired cartridge cases from a 9mm Luger (9x19mm) Taurus pistol, Model Millennium PT-111 Pro, with unknown serial number. Item 2 through 5 consists of four (4) 9mm Luger cartridge cases that bear the headstamp of Federal ammunition. The Item 3 cartridge case was identified as having been fired in the Item 1 pistol. The Item 2 and Item 4 cartridge cases were identified as having been fired in the same firearm, but excluded as having been fired in the same firearm as the Item 1 known test-fired cartridge case and Item 3 cartridge case due to a difference in class characteristics. The Item 5 cartridge case was excluded as having been fired in the same firearm as the Item 1 through Item 4 cartridge cases, due to differences in class characteristics.
PKNNFV	The questioned recovered cartridge case (Item 3) was discharged from the same firearm as the known test-fired cartridge cases (Item 1). The questioned recovered cartridge cases (Items 2 and 4) and cartridge cases (Item 5) were not discharged from the same firearm as the known test-fired cartridge cases (Item 1). The questioned recovered cartridge cases (Item 2 and Item



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	4) were discharged from the same firearm. The questioned recovered cartridge case (Item 5) was discharged from the third firearm.
PQAL2X	Item #3 possessed the same class characteristics, as well as sufficient reproducing individual markings as the three known test fired cartridge cases in item #1 and were determined to have been fired in the suspect's Taurus Millennium PT-111 Pro 9mm semi-automatic pistol. Items #2 & #4 possessed similar class characteristics to item #1; however, they possessed significantly differing individual markings and were fired in a different weapon than item #1. Further examination revealed items #2 & #4 possessed the same class characteristics, as well as sufficient reproducing individual markings to each other and were determined to have been fired in a second weapon. Item #5 possessed similar class characteristics to items #1 through #4; however, it possessed significantly differing individual markings and was determined to have been fired in a third weapon.
PQAQEK	Item 3 was fired in the same firearm as the item 1 test fires. Items 2 and 4 were fired in a second firearm. Item 5 was fired in a third firearm.
PR82AN	Cartridge Case Analysis: Methodology: Physical (Visual Examination); Microscopy (Comparison Microscope). Items 1A, 1B, 1C and 3, the cartridge cases, were fired in the same firearm based upon corresponding class and individual microscopic characteristics. Items 2 and 4, the cartridge cases, were fired in the same firearm based upon corresponding class and individual microscopic characteristics. Item 2 and 4, the cartridge case, were not fired in the same firearm as Item 5, based upon different individual microscopic characteristics.
PRJR4Z	Item 3 was identified microscopically as having been fired in the same firearm that reportedly fired the Item 1 test fires based on agreement of the combination of individual characteristics and all discernible class characteristics. Items 2 and 4 were microscopically eliminated as having been fired in the same firearm that reportedly fired the Item 1 test fires due to disagreement of discernible class characteristics. Items 2 and 4 were identified microscopically as having been fired in the same unknown firearm based on agreement of the combination of individual characteristics and all discernible class characteristics. Item 5 was microscopically eliminated as having been fired in the same firearm that reportedly fired the Item 1 test fires due to disagreement of individual characteristics. Item 5 was microscopically eliminated as having been fired in the same unknown firearm as Items 2 and 4 due to disagreement of discernible class characteristics.
QD6MTQ	Item 3 had been discharged from the same firearm as the known cartridge cases (Item 1). Items 2, 4 and 5 had been discharged from different firearms than the known cartridge cases (Item 1). Items 2 and 4 had been discharged in the same firearm but in a different firearm than the other samples.
QEBECR	Results of Examinations: Items 1 through 5 are 9mm Luger (9x19mm) cartridge cases that bear the headstamp of Federal ammunition. The Items 1 and 3 cartridge cases were identified as having been fired in the same firearm. The Items 2 and 4 cartridge cases were identified as having been fired in the same firearm and were excluded as having been fired in the same firearm as the Items 1 and 3 cartridge cases. The Item 5 cartridge case was excluded as having been fired in the same firearms as the Items 1 through 4 cartridge cases.
QFAFJJ	Item 3 was identified as having been fired by the same firearm as Item 1. This identification is based on the agreement of class characteristics, and individual characteristics observed in the breechface impression and firing pin impression marks. Items 2, 4 and 5 were eliminated as having been fired by the same firearm as Item 1. These eliminations are based on the disagreement of individual characteristics observed in the breechface impression and firing pin impression marks. Items 2 and 4 were identified as having been fired by the same unknown

TABLE 2

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	firearm. This identification is based on the agreement of class characteristics, and individual characteristics observed in the breechface impression and firing pin impression marks. Item 5 was eliminated as having been fired by the same unknown firearm as Items 2 and 4. This elimination is based on the disagreement of individual characteristics observed in the breechface impression and firing pin impression marks.
QPY4HR	Part I: Examined the specimen marked #3. It is a 9mm Luger caliber discharged cartridge case, headstamped FC. The cartridge case marked #3 was compared microscopically against the test standards (#1) and was identified as having been discharged in the same firearm. Part II: Examined the two specimens marked #2 & #4. They are 9mm Luger caliber discharged cartridge cases, headstamped FC. The two cartridge cases marked #2 and #4 were compared microscopically and were identified as having been discharged in the same firearm. The two cartridge cases marked #2 and #4 were compared microscopically against the cartridge cases listed in Part I and were eliminated as having been discharged in the same firearm. Part III: Examined the specimen marked #5. It is a 9mm Luger caliber discharged cartridge case, headstamped FC. The cartridge case marked #5 was compared microscopically against the cartridge cases listed in Part I and Part II and was eliminated as having been discharged in the same firearm.
QU43PB	The 9mm Luger cartridge case (Item 3) was fired in the Taurus firearm (Item 1). The 9mm Luger cartridge cases (Items 2 and 4) were fired in a second firearm. The 9mm Luger cartridge case (Item 5) was fired in a third firearm.
QWV26U	Items number 1 and 3 were fired from the same firearm. Samples 2,4 and 5 did not have any degree of similarity when compared with item 1.
QYHFU6	QC-2 was fired in K-1 based on correspondence of all discernable class characteristics and sufficient agreement of individual characteristics. QC-1 and QC-3 were fired in unknown firearm A based on correspondence of all discernable class characteristics and sufficient agreement of individual characteristics. QC-1 and QC-3 were not fired in K-1 based on a disagreement of class characteristics. QC-4 was fired in unknown firearm B. It was not fired in K-1 based on a sufficient disagreement of individual characteristics, and was not fired in unknown firearm A based on a disagreement of class characteristics.
QYMWR4	Based on microscopic comparisons, in the opinion of the laboratory: Item 1-3-1 (CTS Item 3 cartridge case) was identified as having been fired by the same known firearm that fired item 1-1-1 (CTS Item 1 cartridge cases). Item 1-5-1 (CTS Item 5 cartridge case) was eliminated as having been fired by the same known firearm that fired item 1-1-1 (CTS Item 1 cartridge cases). Based on differences in class characteristics, item 1-2-1 (CTS Item 2 cartridge case) and item 1-4-1 (CTS Item 4 cartridge case) were eliminated as having been fired by the same known firearm that fired item 1-1-1 (CTS Item 1 cartridge cases).
R7XMMT	The cartridge case identified as item 3 in relation to the cartridge cases identified as item 1.1, item 1.2 and item 1.3 in There is sufficient agreement between the individual marks, from which it is determined that they were struck by the same firearm. * The Cartridge case identified as Item 4 in relation to the Cartridge case identified item 2, there is sufficient agreement of individual marks, from which it is determined that they were fired by the same firearm. * The cartridge case marked as item 5 is not related to any of the cartridge cases
RGVJQG	The Item 3 fired cartridge case was fired in the same known firearm that fired the Item 1 test fired cartridge cases, indicated by the submitting agency as being a Taurus model Millennium PT-111 Pro. This identification is based on sufficient agreement of the combination of individual characteristics and all discernible class characteristics. The Items 2 and 4 fired cartridge cases were not fired in the same known firearm that fired the Item 1 test fired

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	<p>cartridge cases. These eliminations are based on differences in class characteristics. The Item 5 fired cartridge case was not fired in the same known firearm that fired the Item 1 test fired cartridge cases. This elimination is based on differences in class and individual characteristics. The Items 2 and 4 fired cartridge cases were fired in the same unknown firearm. This identification is based on sufficient agreement of the combination of individual characteristics and all discernible class characteristics. The Item 5 fired cartridge case was not fired in the same unknown firearm that fired the Items 2 and 4 fired cartridge cases. These eliminations are based on differences in class characteristics.</p>
RHVG4X	<p>The tool marks on the Item No 01 are agreed with the Tool marks on the Item No 03. The tool marks on the Item No 01 are disagreed with the tool marks on the Item No 02 and Item No 04.</p>
RNJ4WG	<p>The cartridge case in Item 3 was fired in the same gun that produced the test fires in Item 1, based on agreement observed in individual characteristics. The cartridge cases in Items 2 and 4 were not fired in the same gun that produced the test fires in Item 1, based on differences observed in class characteristics. However, the cartridge cases in Items 2 and 4 were fired in the same gun, based on agreement in individual characteristics. The cartridge case in Item 5 bears no significant similarities in individual characteristics with those produced on the cartridge cases in Item 1.</p>
RWRV27	<p>A microscopic examination and comparison of the evidence described above revealed the following: Cartridge casings (2,4) are IDENTIFIED as having been discharged from the SAME gun based on the observed agreement of their class characteristics and sufficient agreement of their individual characteristics. Cartridge casing (3) is IDENTIFIED as having been discharged from the SAME gun as Known test fired cartridge casings (1.1, 1.2, 1.3) based on the observed agreement of their class characteristics and sufficient agreement of their individual characteristics. Cartridge casing (5) is ELIMINATED as having been discharged from the same gun as Cartridge casing (3) and Known test fired cartridge casings (1.1, 1.2, 1.3) based on the observed disagreement of individual characteristics. Cartridge casing (5) is ELIMINATED as having been discharged from the same gun as Cartridge casings (2,4) based on the observed disagreement of class characteristics. Cartridge casings (2,4) are ELIMINATED as having been discharged from the same gun as Cartridge casing (5), Cartridge casing (3) and Known test fired cartridge casings (1.1, 1.2, 1.3) based on the observed disagreement of class characteristics.</p>
T468UW	<p>1. The three bullets casings identified as ítem 1, together with the bullet casings identified as ítem 3, have the same class and identity characteristics; which allows us to concluded that they correspond to the caliber 9x19mm, and they were struck by a first firearm. 2. The bullet casings identified as item 2, together with the bullet casings identified as ítem 4, have the same class and identity characteristics; so it is concluded that they correspond to the caliber 9x19mm, and they were struck by a second firearm. 3. The bullet casings as ítem 5, presents identity characteristics that are different from those observed in the bullet casings described above; which allows us to conclude that it was struck by a third firearm</p>
T7TKGL	<p>Based on differences in class characteristics, Items 2 and 4 were EXCLUDED from being fired in the same firearm as Items 1, 3, and 5. Based on microscopic comparisons: Items 1 and 3 were IDENTIFIED as having been fired in the same firearm, reportedly a Taurus Millenium PT-111 Pro. Item 5 was EXCLUDED from being fired in the same firearm as Item 1. Item 5 was fired by one unrecovered firearm. Items 2 and 4 were IDENTIFIED as having been fired in a second unrecovered firearm.</p>
TFXQBN	<p>The questioned recovered cartridge case labeled "Item 3" was discharged from the same</p>

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	firearm as the known test-fired cartridge casings (Item 1). The questioned recovered cartridge casings labeled "Item 2", "Item 4" and "Item 5" were NOT discharged from the same firearm as the known test-fired cartridge casings (Item 1).
TL7W9E	The Item 1 and Item 3 Federal brand caliber 9mm Luger cartridge cases were examined microscopically and identified as having been fired in the same firearm based on corresponding class and individual characteristics. The Item 2 and Item 4 Federal brand caliber 9mm Luger cartridge cases were examined microscopically and identified as having been fired in the same firearm based on corresponding class and individual characteristics. Items 2 and 4 were eliminated as having been fired in the same firearm as the Item 1 cartridge cases due to differences in class characteristics. The Item 5 Federal brand caliber 9mm Luger cartridge case was examined microscopically and eliminated as having been fired in the same firearm as the Item 1 cartridge cases due to differences in individual characteristics.
TW9EJH	Item 3 was fired in the same firearm as the item 1 test fires. Items 2 and 4 were fired in a second firearm. Item 5 was fired in a third firearm.
U2WDD4	A microscopic examination and comparison of the evidence described above revealed the following: Cartridge Casing (3) and Known Test Fires (1.1 - 1.3) are IDENTIFIED as having been discharged from the SAME gun based on the observed agreement of their class characteristics and sufficient agreement of their individual characteristics. Cartridge Casing (2) and Cartridge Casing (4) are IDENTIFIED as having been discharged from a SECOND gun based on the observed agreement of their class characteristics and sufficient agreement of their individual characteristics. Cartridge Casing (5) is IDENTIFIED as having been discharged from a THIRD gun based on the observed disagreement of its class characteristics when compared to Cartridge Casings (2, 4) and disagreement of individual characteristics when compared to Cartridge Casing (3) and Known Test Fires (1.1 - 1.3). Cartridge Casings (2, 4) are ELIMINATED as having been discharged from the same gun as Cartridge Casing (3) and Known Test Fires (1.1 - 1.3) based on the observed disagreement of their class characteristics.
U78C2Q	The Items 2, 4, and 5 casings were not fired in the Item 1 firearm. The Item 3 casing was fired in the Item 1 firearm.
U8K27N	Exhibit 3 (questioned recovered cartridge case) was identified as having been fired in the same firearm as exhibit 1 (test-fired cartridge casings). Exhibits 2 and 4 (questioned recovered cartridge casings) were identified as having been fired in a second 9mm firearm. Suspect weapons are unknown at this time; however, any suspect weapon should be submitted for examination. Exhibit 5 (questioned recovered cartridge case) was fired in a third 9mm firearm. Suspect weapons are unknown at this time; however, any suspect weapon should be submitted for examination.
UCVABY	Item 3 was microscopically examined and identified as having been fired in the same firearm as Items 1A - 1C based on agreement of individual characteristics and all discernible class characteristics. Items 2 and 4 were microscopically examined and identified as having been fired in the same unknown firearm based on agreement of individual characteristics and all discernible class characteristics. Items 2 and 4 were eliminated as having been fired in the same firearm as Items 1A - 1C or the same firearm as Item 5 due to differences in class characteristics. Item 5 was microscopically examined and eliminated as fired in the same firearm as Items 1A - 1C due to differences in individual characteristics.
UGQ49Z	The hypothesis that cartridge cases item 1 and item 3 were fired from the same firearm is very strongly supported.
UJCME4	The fired 9mm cartridge case in item 3 was determined to have been fired in the same weapon as the three fired 9mm cartridge cases in item 1 (known). The two fired 9mm cartridge cases in

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	<p>items 2 and 4 and the fired 9mm cartridge case in item 5 were determined not to have been fired in the same weapon as the three fired 9mm cartridge cases in item 1 (known). The two fired 9mm cartridge cases in items 2 and 4 were fired in one weapon. The fired 9mm cartridge case in item 5 was fired in a different weapon than the two fired 9mm cartridge cases in items 2 and 4. Further analysis of items 2, 4, and 5 is pending submission of two more 9mm weapons for additional comparisons. Item 1 was used for comparison.</p>
UNR3ZP	<p>Item 001 ([Laboratory] Item 001A) and Item 003 ([Laboratory] Item 001C) were identified as having been fired in the same firearm due to the correspondence of all discernable class characteristics and sufficient agreement of individual characteristics. Item 002 ([Laboratory] Item 001B) was eliminated from having been fired in the same firearm as Item 001 ([Laboratory] Item 001A) due to disagreement of discernable class characteristics. Item 005 ([Laboratory] Item 001E) was eliminated from having been fired in the same firearm as Item 001 ([Laboratory] Item 001A) due to correspondence of discernable class characteristics and sufficient disagreement of individual characteristics. Item 002 ([Laboratory] Item 001B) and Item 004 ([Laboratory] Item 001D) were identified as having been fired in the same firearm due to the correspondence of all discernable class characteristics and sufficient agreement of individual characteristics. Item 005 ([Laboratory] Item 001E) was eliminated from having been fired in the same firearm as Item 002 ([Laboratory] Item 001B) due to disagreement of discernable class characteristics.</p>
UP3XN3	<p>The three cartridge cases item 1 notes stable recurring traces of weapon parts with individual surface structures. The cartridge case item 3 shows the same traces of weapon parts with individual surface structures such as the three cases item 1. The cartridge-Cases item 2, item 4 and item 5 show clear differences in the systematic and individual traces compared to item 1 and item 3. It can be excluded that the cartridges item 2, item 4 and item 5 were shot in the same weapon as the cartridge cases item 1 and item 3. The two cartridge cases item 2 and item 4 show the same systematic and individual traces of weapon parts with individual surface structures. These two cases were shot out of one weapon.</p>
UPMK2Q	<p>Microscopic examination and comparison reveal that the cartridge case, Item 3, was fired in the same firearm as the cartridge cases, Item 1, based on agreement of class and individual characteristics. Microscopic examination and comparison reveal that the cartridge cases, Items 2, 4 and 5, were not fired in the same firearm as the cartridge cases, Item 1, based on a disagreement of class and individual characteristics.</p>
UR7Y6Q	<p>The results strongly support that Item 3 was fired from the same firearm as Item 1. The results strongly support that Item 2 and Item 4 were fired from the same unknown firearm.</p>
UVTALJ	<p>Cartridge Case Analysis: Methodology: Physical (Visual Examination); Microscopy (Comparison Microscope). Items 1A, 1B, 1C and 3, the cartridge cases, were fired in the same firearm based upon corresponding class and individual microscopic characteristics. Items 2 and 4, the cartridge cases, were fired in the same firearm based upon corresponding class and individual microscopic characteristics. Items 2 and 4, the cartridge cases, were not fired in the same firearm as Items 1A, 1B, 1C and 3, the cartridge cases, based upon different class characteristics. Item 5, the cartridge case, was not fired in the same firearm as Items 1A, 1B, 1C and 3, the cartridge cases, based upon different individual microscopic characteristics. Item 5, the cartridge case, was not fired in the same firearm as Items 2 and 4, the cartridge cases, based upon different class characteristics.</p>
V2U7LV	<p>A test fired cartridge case from Item 1 was microscopically examined and compared with a recovered fired cartridge case, Item 3. Based on the observed agreement of their class characteristics and sufficient agreement of their individual characteristics, Item 3 is identified as</p>

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	having been fired in the same firearm as the test fired cartridge cases from Item 1. A test fired cartridge case from Item 1 was microscopically examined and compared with the recovered fired cartridge cases, Items 2, 4 and 5. Based on the observed disagreement of patterns of individual characteristics and some of their class characteristics, Items 2, 4 and 5 were eliminated as having been fired in the same firearm as the test fired cartridge cases from Item 1.
V3KADG	The unknown fired cartridge case marked '3' was fire in the same firearm which fired the known cartridge cases marked '1'. The unknown fired cartridge cases marked '2' and '4' were in a second firearm. Other than that which fired the cartridge cases marked '1', '3' and '5'. The unknown fired cartridge case marked '5' was fired in a third firearm. other than that which fired the cartridge cases marked '1', '2', '3' and '4'.
V43XYH	Cartridge Case Analysis: Methodology: Physical (Visual Examination); Microscopy (Comparison Microscope). Items 1 and 3, the cartridge cases, were fired in the same firearm based upon corresponding class and individual microscopic characteristics. Items 2 and 4, the cartridge cases, were fired in the same firearm based upon corresponding class and individual microscopic characteristics. Items 1 and 3, the cartridge cases, were not fired in the same firearm as Items 2 and 4, the cartridge cases, based upon different class characteristics. Items 1 and 3, the cartridge cases, were not fired in the same firearm as Item 5, the cartridge case, based upon different individual microscopic characteristics. Items 2 and 4, the cartridge cases, were not fired in the same firearm as Item 5, the cartridge case, based upon different class characteristics.
VA4GVL	[No Conclusions Reported.]
VA8UMP	The following alternative propositions have been considered: 1. Item 3 was fired from the same gun as item 1. 2. Item 3 was fired from some other gun. The findings are as expected if the first proposition is true. Such findings would be less likely if the second proposition is true. This is based on a consideration of the variety of gun types expected to be used in such incidents and previous experience of the nature of firing marks produced by different guns. The findings provide very strong support for the proposition that item 3 was fired from the same gun as item 1 rather than some other gun. In expressing this level of support I have referred to the following verbal scale: Limited, Moderate, Moderately strong, Strong, Very strong, Extremely strong. The level of support (evidential strength) has been assessed by considering how much more probable such findings would be if the first proposition is true rather than the second. It does not logically follow from this that the first proposition is more likely to be true than the second. (This much broader question will be influenced by any other relevant evidence and circumstances). My interpretations and conclusions are based on the background information currently available to me. It may be necessary to re-assess these if the information changes.
VEFFBL	The item 3 was discharged by the same firearm as the item 1. - The items 2, 4, 5 were not discharged by the same firearm as the item 1.
VF9BTN	After physical and microscopic examination, it is my opinion that: A/ The discharged cartridge casing in Item 3 was fired by the known weapon that fired Item 1. B/ The discharged cartridge casings in Item 2 and Item 4 were fired by the same unknown weapon, not the known weapon that fired Item 1. C/ Item 5 was fired by another unknown weapon. Not the known weapon that fired Items 1 and 3, nor the unknown weapon that fired Items 2 and 4.
VFK8Y	Items 1-1 and 1-3 were microscopically compared and found to have corresponding individual characteristics within the breechface marks and firing pin impression. These cartridge cases were identified as having been fired in the same firearm. Items 1-2 and 1-4 were microscopically compared and found to have corresponding individual characteristics within



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	<p>the breechface marks, firing pin aperture shapes and firing pin impression. These cartridge cases were identified as having been fired in the same firearm. Items 1-2 and 1-4 were microscopically compared to item 1-1 and found to have different class characteristics with respect to firing pin aperture shape. Items 1-2 and 1-4 were eliminated as having been fired in the same firearm as item 1-1. Item 1-5 was microscopically compared to item 1-1 and items 1-2 and 1-4 and found to have different individual characteristics within the firing pin impression. Item 1-5 was eliminated as having been fired in the same firearms as item 1-1 and items 1-2 and 1-4.</p>
VLZL4M	<p>Comparison microscope examinations were conducted on the evidence listed above. The findings of this examiner are the following: 1. Exhibits 1.1 and 1.3 were fired from the suspect firearm based on sufficient agreement of class and individual characteristics observed. 2. Exhibits 1.2 and 1.4 were fired from a second, unknown, firearm based on sufficient agreement of class and individual characteristics observed. The specific brand of suspect weapon for Exhibits 1.2 and 1.4 is unknown at this time; however, any suspect weapon should be submitted to the laboratory for analysis. 3. Exhibits 1.2 and 1.4 were eliminated as having been fired from the same firearm as Exhibits 1.1 and 1.3 based on differences in class characteristics observed. 4. Exhibit 1.5 was eliminated as having been fired by the same firearms as Exhibit 1.1 through 1.4 based on differences in class characteristics observed. The specific brand of suspect weapon for Exhibit 1.5 is unknown at this time; however, any suspect weapon should be submitted to the laboratory for analysis. No further analysis was conducted on the submitted evidence at this time.</p>
VN7444	<p>[No Conclusions Reported.]</p>
VNL69Q	<p>The Exhibit 3 cartridge case was identified as having been fired in the same firearm as the Exhibit 1 purported test fires. The Exhibit 2, 4, and 5 cartridge cases were excluded as having been fired in the same firearm as the Exhibit 1 purported test fires. The Exhibit 2 and 4 cartridge cases were identified as having been fired in the same firearm. The Exhibit 5 cartridge case was excluded as having been fired in the same firearm as the Exhibit 2 and 4 cartridge cases.</p>
VU6L8U	<p>Item 3 was identified microscopically as having been fired in the same firearm that reportedly fired Items 1A - 1C, based on agreement of the combination of individual characteristics and all discernible class characteristics. Items 2 and 4 were identified microscopically as having been fired in the same unknown firearm based on agreement of the combination of individual characteristics and all discernible class characteristics. Items 2 and 4 were microscopically eliminated as having been fired in the same firearm that reportedly fired Items 1A - 1C, due to disagreement of discernible class characteristics. Item 5 was microscopically eliminated as having been fired in the same firearm that reportedly fired Items 1A - 1C, due to disagreement of individual characteristics. Item 5 was microscopically eliminated as having been fired in the same unknown firearm as Items 2 and 4, due to disagreement of discernible class characteristics. Items 1A, 2 and 5 were imaged into the Integrated Ballistics Identification System (IBIS) / BrassTRAX database and any potential leads made from these entries will result in a notification. All evidence items are being returned.</p>
VXBU8Y	<p>The fired cartridge case, Item 3, was identified as having been fired in the same firearm as the test fired cartridge cases, within Item 1, based on agreement of class characteristics and sufficient agreement of individual characteristics within the breech face impression marks and firing pin impression marks. The fired cartridge cases, Item 2 and Item 4, were eliminated as having been fired in the same firearm as the test fired cartridge cases, within Item 1, based on disagreement of class characteristics. The fired cartridge case, Item 5, was eliminated as having been fired in the same firearm as the test fired cartridge cases, within Item 1, based on</p>



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	agreement of class characteristics but significant disagreement of individual characteristics within the firing pin impression marks and breech face impression marks. The fired cartridge cases, Item 2 and Item 4, were identified as having been fired in the same firearm based on agreement of class characteristics and sufficient agreement of individual characteristics within the breech face impression marks. The fired cartridge case, Item 5, was eliminated as having been fired in the same firearm as the fired cartridge cases, Item 2 and Item 4, based on disagreement of class characteristics.
VYPH87	Item 3 (a 9mm Luger caliber cartridge case) was identified* as having been fired by the same firearm as Item 1 (three 9mm Luger caliber cartridge cases, said to be test fires from a Taurus Model Millennium PT-111 Pro). Items 2, 4 and 5 (three 9mm Luger caliber cartridge cases) were fired by a different firearm than Item 1. Items 2 and 4 were identified* as having been fired by the same firearm. Item 5 was fired from a different firearm than Items 2 and 4. *Source identification is reached when the discernable class and individual characteristics have corresponding detail and the examiner would not expect to see the same arrangement of details repeated in another source.
W8CVJB	Items 1 through 5 were microscopically examined. The Item 3 cartridge case was identified as having been fired in the firearm represented by Item 1 based on corresponding class and individual characteristics. The Item 2 and 4 cartridge cases were identified as having been fired in the same firearm based on corresponding class and individual characteristics. The Item 2, 4 and 5 cartridge cases were eliminated as having been fired in the firearm represented by Item 1 due to differences in class and/or individual characteristics. Additionally, the Item 5 cartridge case was eliminated as having been fired in the same firearm as Items 2 and 4 due to differences in class characteristics.
W8DTWQ	[No Conclusions Reported.]
WDHAPL	Exhibit 3 (questioned recovered cartridge case) was identified as having been fired in the same 9mm firearm as exhibit 1 (test fired cartridge casings). Exhibits 2 and 4 (questioned recovered cartridge casings) were identified as having been fired in a second 9mm firearm. Suspect weapons are unknown at this time; however, any suspect weapon should be submitted for examination. Exhibit 5 (questioned recovered cartridge case) was identified as having been fired in a third 9mm firearm. Suspect weapons are unknown at this time; however, any suspect weapon should be submitted for examination.
WDYJHL	The shell marked #1 was compared microscopically against the shell marked #3 and identified as having been discharged in the same firearm.
WGL4NQ	Microscopic examination and comparison of the fired 9mm caliber cartridge cases in specimens #2-#5 revealed the following: >specimens #2 and #4 possessed the same class characteristics as well as sufficient agreement of individual markings to determine that they were fired in the same firearm. >specimen #3 possessed similar class characteristics to specimens #2, #4, and #5 but possessed significant differing individual markings and was fired in a second firearm. >specimen #5 possessed similar class characteristics to specimens #2-#4 but possessed significant differing individual markings and was fired in a third firearm. The Taurus pistol, specimen #1 was test fired using material from the laboratory collection and was found to be operable. The reference fired cartridge cases obtained were compared to the fired 9mm caliber cartridge cases in specimens #2-#5. It was determined that specimen #3 possessed the same class characteristics as the test fired material in specimen #1 as well as sufficient agreement of individual markings to determine that specimen #3 was fired in specimen #1. Specimens #2, #4 and #5 possessed similar class characteristics to specimen #1, but possessed significant differing individual markings and were not fired in specimen #1.

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WebCode	Conclusions
	NOTE: A representative sample of casings was placed into NIBIN. All evidenced was returned to the Crime Laboratory Evidence Vault upon completion of analysis.
WNKPBJ	Based on differences in class characteristics, it was determined that submissions 001-4 and 001-6 were excluded as originating from the same source that fired submissions 001-5 and 001-7 (source exclusion). Submissions 001-4 and 001-6 were microscopically compared. Based on similar class characteristics and sufficient agreement in individual characteristics, it was determined that submissions 001-4 and 001-6 originated from the same source (source identification). Submissions 001-5 and 001-7 were microscopically compared. Based on differences in individual characteristics, it was determined that submission 001-5 was excluded as originating from the same source that fired submission 001-7 (source exclusion). Based on differences in class characteristics and individual characteristics, it was determined that submissions 001-4, 001-6, and 001-7 were excluded as originating from the same source that fired submissions 001-1 through 001-3 test fires produced from a Taurus model Millennium PT-111 Pro firearm (source exclusion). Submissions 001-5 and 001-2 test fire were microscopically compared. Based on similar class characteristics and sufficient agreement in individual characteristics, it was determined that submission 001-5 originated from the same source that fired submissions 001-1 through 001-3 test fires produced from a Taurus model Millennium PT-111 Pro firearm (source identification).
WRJ4ZU	First, the three expended cartridge cases (test-fired with the suspect's weapon, item 1) were compared with each other to evaluate the intravariability of the visible marks. In a second step, the four seized cartridge cases (items 2, 3, 4 and 5) were compared with each other to determine if they were fired from the same firearm. The examination revealed marks with fine individual details, which very strongly support the hypothesis that these four cartridge cases were fired with three different firearms, with items 2 and 4 having been fired from the same gun. After these two steps, we compared the three expended cartridge cases (item 1) with the four seized cartridge cases (items 2, 3, 4, and 5), taking into account the results of the first two steps of the examination: intravariability of the test shots and the examination of the seized cartridge cases. The results of this final comparison step strongly supported the hypothesis that the item 3 seized cartridge case was fired by the same firearm as the three cartridge cases fired with the suspect's firearm (item 1). Items 2, 4, and 5 were fired from two different weapons. In a real case, we would examine the trace-producing weapon parts for group characteristics to verify the individuality of the markings.
WWC6ZN	A/ The 9mm Luger discharged cartridge casing mentioned in Item 3 WAS FIRED by the same weapon which produced Item 1 (Test Fires). "IDENTIFICATION" B/ The 9mm Luger discharged cartridge casings mentioned in Items 2 & 4 WERE BOTH FIRED by the same unknown weapon, capable of chambering and firing 9mm Luger ammunition but, WERE NOT FIRED by the same weapon which produced Item 1 (Test Fires) and Item 3. "IDENTIFICATION" C/ The 9mm Luger discharged cartridge casing mentioned in Item 5 was fired by an unknown weapon, capable of chambering and firing 9mm Luger ammunition but, was not fired by the same weapon(s) which produced Items 1, 2, 3 & 4. "EXCLUSION"
WX7XTL	The vanilla of item No.3 was struck by the gun that struck the vanillas of item No.1 -The vanilla of item No. 2, 4 and 5 gives a negative result for the firearm that hit the vanilla of item No. 1.
WYZG2E	Using the Bayesian approach in casework we view our findings under two hypotheses. In this test we used the following hypotheses: - H1: The questioned cartridge case is fired by the submitted firearm. - H2: The questioned cartridge case is fired by another firearm of the same caliber and with the same class characteristics as the submitted firearm. The likelihood ratio (LR) of the findings is expressed in the following verbal scale: - Approximately equally probable (LR = 1-2) - Slightly more probable (LR = 2-10) - More probable (LR = 10-100) - Much more

TABLE 2

WebCode	Conclusions
X3XHG3	<p>probable (LR = 100-10,000) - Very much more probable (LR = 10,000-1,000,000) - Extremely more probable (LR = &gt;1,000,000) Conclusions: Item 3: The findings are extremely more probable when H1 is true than when H2 is true. Item 2, 4, 5: Due to other class characteristics this cartridge cases are fired by another firearm than the submitted firearm. 1</p> <p>The one 9mm shell casing(Ex.2) and the one 9mm shell casing (Ex.4) could not have been fired out of the Taurus pistol (Ex.1) due to differing individual characteristics in the primer and firing pin impressions. (Elimination).</p> <p>The one 9mm shell casing (Ex.3) was compared macroscopically and microscopically to the test fired shell casings (Ex.1). Based on the agreement of individual characteristics and all discernible class characteristics, it was determined the one 9mm shell casing (Ex.3) was fired out of the Taurus pistol (Ex.1). (Identification).</p> <p>The one 9mm shell casing (Ex.5) was compared macroscopically and microscopically to the test fired shell casings (Ex.1). Although there were similar class and some individual characteristics, there was not enough to identify or eliminate as having been fired out of the Taurus pistol (Ex.1). (Inconclusive).</p> <p>The one 9mm shell casing (Ex.2) was compared macroscopically and microscopically to the one 9mm shell casing (Ex.4). Based on the agreement of individual characteristics and all discernible class characteristics, it was determined the one 9mm shell casing (Ex.2) and the one 9mm shell casing (Ex.4) were fired out of the same firearm. (Identification).</p>
X7WW4R	<p>1. The lab items 2 and 4 cartridge cases were identified as having been fired in the same firearm. 2. The lab items 2 and 4 cartridge cases were eliminated from having been fired in the same firearm as the lab items 3 and 5 cartridge cases. 3. The lab item 3 cartridge case was eliminated from having been fired in the same firearm as the lab item 5 cartridge case. 4. The lab item 3 cartridge case was identified as having been fired in the same firearm as the lab item 1 test fired cartridge cases. 5. The lab items 2, 4, and 5 cartridge cases were eliminated from having been fired in the same firearm as the lab item 1 test fired cartridge cases.</p>
XEP6NH	<p>1. The cartridges cases described in the item 1 and item 3, are 9mm Luger caliber and were fired by the same firearm (Identification). [Initials] Oct/29/2024 2. The cartridges cases described in the item 2 and item 4, are 9mm Luger caliber and were fired by the same firearm (Identification). [Initials] Oct/29/2024 3. The cartridge case described in the item 5 is 9mm Luger caliber and was fired by a firearm and not fired by the firearm the shot the cartridges cases described in the Items 1, 2, 3 and 4 (Elimination).[Initials] Oct/29/2024</p>
XF6B3M	<p>item 2 &amp; 4: 2nd firearm . item 5 : 3rd firearme</p>
XFKMQJ	<p>The item 3 (questioned recovered cartridge case) was discharged by the suspect's firearm (Taurus Millennium PT-111 Pro ). - The items 2, 4 and 5 (questioned recovered cartridge casings) were not discharged by the suspect's firearm (Taurus Millennium PT-111 Pro ).</p>
XHCNUM	<p>[No Conclusions Reported.]</p>
XJ88VN	<p>Item 3 cartridge case was fired as the Item1 cartridge cases. Item 2,4,5 cartridge cases were different from the firearm used to fire Item 1 cartridge cases.</p>
XL7KDL	<p>The three fired cartridge cases from Lab Item 1 were identified as having been fired in the same firearm as the fired cartridge case, Lab Item 3. The fired cartridge cases Lab Items 2 and 4 were identified as having been fired in the same unknown firearm. Lab Items 1 and 3 were excluded as having been fired in the same firearm as Lab Items 2 and 4. The fired cartridge case Lab Item 5 was excluded as having been fired in the same firearm as Lab Items 1 and 3. The fired cartridge case Lab Item 5 was excluded as having been fired in the same firearm as Lab Items 2 and 4.</p>

TABLE 2

WebCode	Conclusions
XPAGZV	The item 1-3 cartridge case is identified as having been fired in the same firearm as the item 1-1A through 1-1C cartridge cases. (First firearm; Taurus brand, model Millennium PT-111 Pro) The item 1-2 and 1-4 cartridge cases are identified as having been fired in the same unknown firearm. (Second firearm; unknown firearm) The item 1-5 cartridge case is eliminated as having been fired in the same firearm as either the item 1-1A through 1-1C and 1-3 cartridge cases or the item 1-2 and 1-4 cartridge cases. (Third firearm; unknown firearm)
XTVZ7Y	There were three firearms in the scene. The Item 3 is from the Taurus Millennium PT-111. Item 2 and 4 is from a second, Item 5 is from a third firearm.
XU73UJ	The questioned recovered cartridge casings (Items 2, 4 and 5) did not were discharged from the same firearm as the known test-fired cartridge casings (Item 1). The questioned recovered cartridge casings (Item 3) did was discharged from the same firearm as the known test-fired cartridge casings (Item 1).
XVYVP3	Through macroscopic/microscopic examination and based on agreement of discernible class characteristics and sufficient corresponding individual detail, the fired 9mm caliber cartridge cases, Laboratory Items 1 and 3, were identified as having been fired in the same firearm. Through macroscopic/microscopic examination and based on agreement of discernible class characteristics and sufficient corresponding individual detail, the fired 9mm caliber cartridge cases, Laboratory Items 2 and 4, were identified as having been fired in the same firearm. Through macroscopic/microscopic examination and based on significant disagreement of class characteristics, the fired 9mm caliber cartridge cases, Laboratory Items 1 and 3, could not have been fired in the same firearm as the fired 9mm caliber cartridge cases, Laboratory Items 2 and 4. Through macroscopic/microscopic examination and based on significant disagreement of class characteristics, the fired 9mm caliber cartridge case, Laboratory Item 5, could not have been fired in the same firearm as the fired 9mm caliber cartridge cases, Laboratory Items 1 and 3, or in the same firearm as the fired 9mm caliber cartridge cases, Laboratory Items 2 and 4.
XX6DPJ	Item 3 was IDENTIFIED as having been fired in the Item 1 firearm. Item 2 was IDENTIFIED as having been fired in the same unknown firearm as Item 4. Items 2 and 4 were ELIMINATED as having been fired in the ITEM 1 firearm. Item 5 could neither be IDENTIFIED nor ELIMINATED as having been fired in the ITEM 1 firearm or the same unknown firearm as ITEMS 2 and 4.* *This conclusion is based on best practices when comparing cartridge case groups and there is only one sample to refer to in the comparison phase and the class characteristics are consistent.
XZRXXM	After the comparison it was found that item 3 matched with the controls. The control and item 2 have a unique mark inside the firing pin and on the headstamp.
Y2YUEH	1-Cartridge case identified as Item 3, has been fired by the same gun that fired cartridge cases identified as Item 1. 2-Cartridge cases identified as Item 2, Item 4 and Item 5, have not been fired by the same gun that fired cartridge cases identified as Item 1.
Y3RPXK	Compared the test fires (Item 1-1 A,B,C) of seized Taurus pistol to Items 1-2 through 1-5. As a result of physical and microscopic examination of the submitted evidence, against the test fired specimens, it is my opinion that: A/ The discharged cartridge casing mentioned above as Item 1-3 was fired by the suspect's weapon described as a Taurus model PT-111 Pro, semi-automatic pistol. "Identification" B/ The discharged cartridge casings mentioned above as Item 1-2 and 1-4 were both fired by the same unknown weapon capable of firing 9mm Luger caliber ammunition. Due to a disagreement of individual microscopic markings in areas examined, Items 1-2 and 1-4 were not fired by the seized Taurus pistol. "Identification and Exclusion" C/ The discharged cartridge casing mentioned above as Item 1-5 was fired by an

TABLE 2

WebCode	Conclusions
Y4LHQH	unknown weapon capable of firing 9mm Luger caliber ammunition. Due to a disagreement of individual microscopic markings, Item 1-5 was not fired by the seized Taurus pistol or the unknown weapon that fired Items 1-2 and 1-4. "Exclusion"
Y4LHQH	Results of Examinations: Item 1 is three 9mm Luger (9x19mm) test-fired cartridge cases that bear the headstamp of Federal ammunition. Items 2 through 5 are 9mm Luger cartridge cases that bear the headstamp of Federal ammunition. The Item 3 cartridge case was identified as having been fired in the same firearm as the Item 1 test-fired cartridge cases. The Item 2 and 4 cartridge cases were identified as having been fired in the same firearm. The Item 2 and 4 cartridge cases were excluded as having been fired in the same firearm as the Item 1 test-fired cartridge cases and the Item 3 cartridge case based on a difference in class characteristics. The Item 5 cartridge case was excluded as having been fired in the same firearm as the Item 1 test-fired cartridge cases and the Item 3 cartridge case, as well as, the Item 2 and 4 cartridge cases based on a difference in class characteristics.
Y8LKX8	The 9mm Luger caliber cartridge case (Item 3) was identified as being fired in the 9mm Luger caliber Taurus model Millennium PT-111 Pro pistol (represented by Item 1). The two 9mm Luger caliber cartridge cases (Item 2, Item 4) were identified as being fired in the same unknown firearm. The 9mm Luger caliber cartridge case (Item 5) was eliminated as being fired in the same firearm as the 9mm Luger caliber cartridge case (Item 3) and eliminated as being fired in the same unknown firearm as the two 9mm Luger caliber cartridge cases (Item 2, Item 4). The three 9mm Luger caliber cartridge cases (Item 2, Item 4, Item 5) were eliminated as being fired in the 9mm Luger caliber Taurus model Millennium PT-111 Pro pistol (represented by Item 1).
Y9H3Y9	The Item 1 through 5 Federal 9mm Luger cartridge cases were microscopically examined. The Item 1 and Item 3 cartridge cases were identified as having been fired in the same firearm based on corresponding class and individual characteristics. The Item 2 and Item 4 cartridge cases were identified as having been fired in the same firearm based on corresponding class and individual characteristics. The Item 2 and 4 cartridge cases were eliminated as having been fired in the same firearm as the Item 1, 3 or 5 cartridge cases due to differences in class characteristics. The Item 5 cartridge case was eliminated as having been fired in the same firearm as the Item 1 and Item 3 cartridge cases due to sufficient differences in individual characteristics.
Y9HZCP	The 001-01 through 001-05 fired cartridge cases were examined and microscopically compared to each other with the following results: Item 001-02, 001-04, and 001-05 fired cartridge cases were eliminated as having been fired in the same firearm as the 001-01 fired cartridge cases. Item 001-03 fired cartridge case was identified as having been fired in the same firearm as the 001-01 fired cartridge cases.
YF24JR	The fired cartridge case (item F2_3) was fired in the suspect's Taurus Millennium PT-111 Pro. The fired cartridge cases (items F2_2 and F2_4) were fired in the same firearm as each other, but not from the suspect's Taurus Millennium PT-111 Pro. The fired cartridge case (item F2_5) was not fired in the suspect's Taurus Millennium PT-111 Pro or in the same firearm that fired items F2_2 and F2_4.
YGYEEU	The Item 3 cartridge case is identified as having been fired in the same firearm as the Item 1A, 1B and 1C cartridge cases. The Item 2 and 4 cartridge cases are identified as having been fired in the same firearm as each other. They are eliminated from having been fired in the same firearm as the Item 1A, 1B, 1C and 3 cartridge cases. The Item 5 cartridge case is eliminated from having been fired in the same firearm as the Item 1A, 1B, 1C and 3 cartridge cases. The Item 5 cartridge case is also eliminated from having been fired in the same firearm

TABLE 2

WebCode	Conclusions
	as the Item 2 and 4 cartridge cases.
YM3FFN	The Item 2 and Item 4 cartridge cases were microscopically compared and determined to have similar class characteristics and sufficient agreement of individual characteristics for an identification. In the opinion of the examiner Item 2 and Item 4 were fired in the same firearm. The Item 3 cartridge case were microscopically compared with the Item 1 test fired cartridge cases and determined to have similar class characteristics and sufficient agreement of individual characteristics for an identification. In the opinion of the examiner Item 3 was fired in the same firearm which fired the Item 1 test fired cartridge cases. The Item 5 cartridge case was microscopically compared with Items 1 and Item 3 and determined to have disagreement of individual characteristics sufficient for an elimination. In the opinion of the examiner Item 5 was not fired in the firearm which fired Items 1 and Item 3. The Item 5 cartridge case was microscopically compared with Item 2 and Item 4 and determined to have disagreement of individual characteristics sufficient for an elimination. In the opinion of the examiner Item 5 was not fired in the firearm which fired Item 2 and Item 4.
YM3H38	The one (1) fired cartridge case, item 1.3, was identified as having been fired in the Taurus pistol, item 1.1, based on the agreement of all discernable class characteristics and agreement of corresponding individual microscopic markings. The two (2) fired cartridge cases, items 1.2 and 1.4, were each identified as having been fired in the same firearm based on the agreement of all discernable class characteristics and agreement of corresponding individual microscopic markings. The two (2) fired cartridge cases, items 1.2 and 1.4, were each eliminated as having been fired in the Taurus pistol, item 1.1, based on a difference in class characteristics (breechface marks (granular vs coarse parallel) and firing pin aperture (irregular vs circular)). The one (1) fired cartridge case, item 1.5, was eliminated as having been fired in the Taurus pistol, item 1.1, based on a difference in class characteristics (breechface marks (fine parallel vs coarse parallel)). The one (1) fired cartridge case, item 1.5, was eliminated as having been fired in the same firearm as the cartridge cases, items 1.2 and 1.4, based on a difference in class characteristics (breechface marks (fine parallel vs granular)).
YMY3ML	Item #3 was fired from the known firearm. Item #2 and 4 were fired from the same firearm, but not from the known firearm. Item #5 was not fired from the known firearm, but from a different weapon
YQ2TX8	EVIDENCE SUBMITTED: Lab Item # Agency Item # Description; 1 F2 One (1) cardboard box containing: 1.1 F2 Testfires from one (1) Taurus model Millennium PT-1111, 9mm Luger caliber pistol. 1.2 F2 One (1) fired Federal brand, 9mm Luger caliber cartridge case. 1.3 F2 One (1) fired Federal brand, 9mm Luger caliber cartridge case. 1.4 F2 One (1) fired Federal brand, 9mm Luger caliber cartridge case. 1.5 F2 One (1) fired Federal brand, 9mm Luger caliber cartridge case. CONCLUSIONS OF ANALYSIS: The one (1) fired cartridge case, item 1.3, was identified as having been fired in the Taurus pistol, item 1.1, based on the agreement of all discernable class characteristics and agreement of corresponding individual microscopic markings. The three (3) fired cartridge cases, items 1.2, 1.4, 1.5, were each eliminated as having been fired in the Taurus pistol, item 1.1, based on a difference in class characteristics (breechface marks (fine parallel vs. granular (1.2 and 1.4) and fine vs coarse parallel (1.5)) and firing pin aperture shape (circle vs. irregular shaped (1.2 and 1.4)). The one (1) fired cartridge case, item 1.4, was identified as having been fired in the same firearm as the one (1) cartridge case, item 1.2, based on the agreement of all discernable class characteristics and agreement of corresponding individual microscopic markings. The one (1) cartridge case, item 1.5, was eliminated as having been fired in the same firearm as the two (2) fired cartridge cases, items 1.2 and 1.4, based on a difference in class characteristics (breechface marks (parallel vs granular), and firing pin aperture shape (circle vs irregular shaped)).



TABLE 2

WebCode	Conclusions
YQ3QBN	[No Conclusions Reported.]
YWNNTJ	The test fired cartridge cases in Item 1 were microscopically examined in conjunction with the cartridge cases in Items 2-5 (4 total). Based on these comparative examinations and observed class and individual characteristics, it was determined that: A) The cartridge case in Item 3 had been fired in the same firearm as the test fired cartridge cases in Item 1. B) The cartridge cases in Items 2 and 4 had both been fired in the same unknown firearm. C) The cartridge case in Item 5 bears no marks to link it to the same firearm as the test fired cartridge cases in Item 1 or to the same unknown firearm as Items 2 and 4. Therefore, Item 5 had been fired in a second unknown firearm.
YXFHWF	Item A-3 (Item 3) was fired in the same firearm as Items A-1(a-c) (Item 1). Items A-2 (Item 2) and A-4 (Item 4) were fired in the same unknown firearm. Item A-5 (Item 5) was fired in a different, unknown firearm.
Z8JAJF	1. Item 2, Item 4 and Item 5 were not similar to Item 1 in terms of firing-pin impression, therefore, Item 2, item4 and Item 5 ( fire cartridges cases) had not been fired through suspect's firearm. 2. Item 3 (fired cartridge case) was strongly similar to Item 1 in terms of firing-pin impression and extraction-mark ( moderately similar). Therefore, Item 3 had been fired through suspect's firearm
ZB2ED4	Examinations showed the cartridge case listed as Item 3 was discharged from the same firearm as the known test-fired cartridge casings (Item 1). Examinations showed that the cartridge cases listed as Item 2 and Item 4 were discharged from the same unknown firearm. Examinations showed that the cartridge case listed as Item 5 was discharged from a second unknown firearm.
ZB7UNJ	Firearm traces on cartridge case marked as Item 3 matches with firearm traces on a cartridge cases fired from recovered gun Taurus Millennium PT 111 Pro with the highest matching rate - cartridge case Item 3 was ejected from a recovered gun Taurus Millennium PT 111 Pro. Firearm traces on other cartridge cases marked as Item 2, 4 and 5 do not match with firearm traces on a cartridge cases fired from recovered gun Taurus Millennium PT 111 Pro - cartridge cases Item 2, 4 and 5 were not ejected from a recovered gun Taurus Millennium PT 111 Pro.
ZD9UKA	The firearm (Item 1) discharged the cartridge case Item 3. The firearm (Item 1) did not discharged the cartridge cases Item 2, Item 4 and Item 5.
ZDAP8M	Item #1 (Test fires) vs. Item #3 - IDENTIFICATION. Examined the Item marked #1 (Test fires) and #3 against each other. The cartridge casings marked #1 (Test fires) and #3 were IDENTIFIED as having been discharged in the same firearm.
ZEKC4F	Laboratory Item #001.A (Item 1) test fired cartridge cases discharged from the suspect's firearm are identified as being fired by the same firearm as Laboratory Item #001.C (Item 3) spent brass FC 9mm Luger cartridge case recovered from the crime scene. Laboratory Items #001.B (Item 2) and 001.D (Item 4) two spent brass FC 9mm Luger cartridge cases recovered from the crime scene are identified as being fired by the same firearm. Laboratory Items #001.B (Item 2) and 001.D (Item 4) two spent brass FC 9mm Luger cartridge cases recovered from the crime scene are eliminated as being fired by the same firearm as Laboratory Item #001.A (Item 1) test fired cartridge cases discharged from the suspect's firearm or Laboratory Item #001.E (Item 5) spent brass FC 9mm Luger cartridge case recovered from the crime scene. Laboratory Item #001.E (Item 5) spent brass FC 9mm Luger cartridge case recovered from the crime scene is eliminated as being fired by the same firearm as Laboratory Item #001.A (Item 1) test fired cartridge cases discharged from the suspect's firearm.
ZQDQ6X	A microscopic examination and comparison of the evidence described above revealed the



TABLE 2

WebCode	Conclusions
	<p>following: Cartridge casing (3) and known test fired cartridge casings (1.1-1.3) are identified as having been discharged in the SAME gun based on the observed agreement of their class characteristics and sufficient agreement of their individual characteristics. Cartridge casing (2) and cartridge casing (4) are identified as having been discharged in the SAME gun based on the observed agreement of their class characteristics and sufficient agreement of their individual characteristics. Cartridge casing (5) and cartridge casing/ known test fired cartridge casings (3, 1.1-1.3) are ELIMINATED as having been discharged in the same gun based on the observed disagreement of individual characteristics. Cartridge casing (5) and cartridge casings (2, 4) are ELIMINATED as having been discharged in the same gun based on the observed disagreement of class characteristics. Cartridge casings (2, 4) and cartridge casing/ known test fired cartridge casings (3, 1.1-1.3) are ELIMINATED as having been discharged in the same gun based on the observed disagreement of class characteristics.</p>
ZUFNFQ	<p>el ítem 3 fue percutido por el arma de fuego con ítem 1. el ítem 2 y el ítem 4 fueron percutidos por una misma arma de fuego distinta al ítem 1. el ítem 5 fue disparo por otra arma de fuego distinta al ítem 1. [Translation by CTS: Item 3 was fired by the same firearm as Item 1. Item 2 and Item 4 were fired by the same firearm other than Item 1. Item 5 was fired by another firearm other than Item 1.]</p>

# Additional Comments

## TABLE 3

WebCode	Additional Comments
274CNU	Items 2 and 4 are an ID to each other.
27QLXY	Item 2 and item 4 may have been discharged from the same firearm but we cannot rule out the use of another weapon. In our opinion at least 3 different firearms have been discharged at the locus.
29RLZG	The questioned cartridge cases (Items 2 and 4) were discharged from the same firearm.
2EDL9G	it is concluded that three firearms were involved at the scene.
2EWFYJ	Technical Notes: Class characteristics are defined as measurable features of a firearm/tool which indicate a restricted group source. They result from design features and are determined prior to manufacture of the firearm/tool. Individual characteristics are defined as marks produced by the random imperfections or irregularities of firearm/tool surfaces. These random imperfections or irregularities are produced incidental to manufacture and/or caused by use, corrosion, or damage, and are unique to that specific tool. Any conclusions indicating that a toolmark was made by a specific firearm/tool are not to the absolute exclusion of all other firearms/tools because it is not feasible to examiner all possible firearms/tools. However, observing this amount of agreement from a different source is extremely remote.
2X98XE	Identification: Is based on in the agreement of individual characteristics observed through the microscopic comparison examination. Elimination: Is based on in the disagreement of individual characteristics observed through the microscopic comparison examination.
3BCXCR	Item 2 and 4 were fired by a same other unknown firearm Item 5 was fired by an other unknown firearm
3ZGPR4	The submitted fired cartridge case (Item 5) was neither identified or eliminated as having been fired in the firearm that fired the submitted test fires (Items 1A, 1B, & 1C) and the submitted fired cartridge case (Item 3). There is agreement of all discernable class characteristics without agreement or disagreement of individual characteristics due to an absence, insufficiency, or lack of reproducibility.
47GNFY	If we could get casts to assist with the potential for subclass that would be helpful!
4JH4JE	Items 2 and 4 are identical to each other, but they are not identical to item 5, therefore, items 2, 3, 4, 5 were fired by three weapons.
6HPJGF	TECHNICAL NOTES: Class characteristics are defined as measurable features of a firearm/tool which indicate a restricted group source. They result from design features and are determined prior to manufacture of the firearm/tool. Individual characteristics are defined as marks produced by the random imperfections or irregularities of firearm/tool surfaces. These random imperfections or irregularities are produced incidental to manufacture and/or caused by use, corrosion, or damage, and are unique to that specific tool. Any conclusions indicating that a toolmark was made by a specific firearm/tool are not to the absolute exclusion of all other firearms/tools because it is not feasible to examine all possible firearms/tools. However, observing this amount of agreement from a different source is considered extremely remote.
7RAC2B	There are at least, three firearms involved in the incident, ITEM 3 was discharged by the Taurus Millennium PT 111 Pro. ITEM 2 and ITEM 4 were discharged by the same firearm, but different than the one that discharge ITEM 3 and ITEM 5. ITEM 5 was discharged by a

TABLE 3

WebCode	Additional Comments
	different firearm that discharge ITEM 2, ITEM 3 and ITEM 4.
7UWV7F	Further more in my opinion Item 2 and 4 were fired in a different weapon and Item 5 was also fired in a third weapon, to conclude that 3 different weapons were used.
8K8PMG	The Q1 (Item #2) and Q3 (Item #4) expended casings were microscopically examined and found to have been fired from the same firearm, but NOT the suspect firearm.
8LERPE	After microscopic comparison of Case #24-5262 Item #5, one (1) recovered cartridge casing, there is insufficient quality and quantity of agreement of individual class markings to identify Item #5, one discharged cartridge casing, as having been fired from the Taurus Millennium PT-111 Pro firearm. Therefore, it is INCONCLUSIVE as to whether Item #5 was fired from the Taurus Millennium PT-111 Pro firearm. Although the test-fired expended cartridge casings and Item #5, one (1) recovered cartridge casing, had agreement of class characteristics, it is inconclusive as to whether Item #5 was fired from the Taurus Millennium PT-111 Pro firearm. This is because the firing pin impression on Item #5 did not have enough information to compare to the test fires, and the parallel breech face markings on both the primer and headstamp areas of Item #5 did not provide enough information when compared to the test fires. There was also a lack of firing pin aperture markings, which contributed to an inconclusive finding.
93YUQZ	The cartridge cases in Items 2 and 4 were fired in the same gun, based on agreement observed in individual characteristics.
9KLBWU	Items were labeled using internal LIMS numbers. The internal LIMS item numbers are as follows: Agency Item 1 = LIMS Item 01-01A through 01-01C Agency Item 2 = LIMS Item 01-02 Agency Item 3 = LIMS Item 01-03 Agency Item 4 = LIMS Item 01-04 Agency Item 5 = LIMS Item 01-05
9WC8UA	The item 1 cartridge cases are labeled as being test fires from a seized Taurus Millennium PT-111 Pro.
ABPW83	Item 2 and Item 4 were identified as having been discharged in the same firearm. (Identification). At least three (3) 9mm Luger calibre firearms were discharged at the crime scene.
ADGWNL	SUFFICIENT AGREEMENT: Sufficient agreement exists between two toolmarks means that the agreement is of a quantity and quality that the likelihood another tool could have made the mark is so remote as to be considered a practical impossibility. Sufficient agreement is related to the significant duplication of random toolmarks as evidenced by a pattern or combination of patterns of surface contours. There are parallel microscopic marks on the breech face of item 4 around the headstamp area (which is excluded from item 1) that can be identified to marks in the same area of two of the test fired cartridge cases from item 1. The same marks on the two test fired cartridge cases from item 1 can be identified to each other also.
BPPYPA	Cartridge case (Item 2) and cartridge case (Item 4) were discharged from the same firearm, based on observation on class and individual characteristics.
BZL3QH	Images of Items 1A, 2 & 5 would be entered into NIBIN in casework.
CHJPT2	LIMITATIONS: 1 Practical Certainty: Since it is not possible to collect and examine samples of all firearms, it is not possible to make an identification with absolute certainty. However all scientific research and testing to date and the continuous inability to disprove the principles of toolmark analysis have demonstrated that firearms produce unique, identifiable characteristics which allow examiners to reliably make identifications. Firearms/Toolmark Identification is an

TABLE 3

WebCode	Additional Comments
	empirical science that relies on objective observations and a subjective interpretation of microscopic marks of value.
D4XUTV	The cartridge cases in Items 2 and 4 were fired in the same gun, based on agreement observed in individual characteristics.
D4YTL4	<p>Methods: Pattern Examination: Toolmarks, whether they are present on evidence items or secondary evidence created in the Laboratory, undergo two stages of comparison. First, the class characteristics are examined and compared. If the class characteristics of the toolmarks are not clearly different, the examination moves to a second stage using comparative microscopy. Comparative examinations of the impressed and striated toolmarks, in at least two items, are conducted to determine if patterns of similarity exist. At the completion of these comparisons, one of the following three opinions is issued: 1) Source Exclusion: Source exclusion is an Examiner's conclusion that two toolmarks did not originate from the same source. This conclusion is an Examiner's opinion that the observed difference(s) in class characteristics provides extremely strong support for the proposition that the two toolmarks came from different sources and extremely weak or no support for the proposition that the two toolmarks came from the same source. A source exclusion based on a minor difference in measured class characteristics requires a verification. 2) Source Identification: Source identification is an Examiner's conclusion that two toolmarks originated from the same source. This conclusion is an Examiner's opinion that all observed class characteristics are in agreement and the quality and quantity of corresponding individual characteristics is such that the Examiner would not expect to find that same combination of individual characteristics repeated in another source. The basis for a source identification conclusion is an Examiner's opinion that the observed class characteristics and corresponding individual characteristics provide extremely strong support for the proposition that the two toolmarks originated from the same source and extremely weak support for the proposition that the two toolmarks originated from different sources. A source identification requires a verification and is the Examiner's opinion that the probability that the two toolmarks were made by different sources is so small that it is negligible. 3) Inconclusive: Inconclusive is an Examiner's conclusion that all observed class characteristics are in agreement but there is insufficient quality and/or quantity of corresponding individual characteristics such that the Examiner is unable to identify or exclude the two toolmarks as having originated from the same source. This conclusion is an Examiner's opinion that there is an insufficient quality and/or quantity of individual characteristics to identify or exclude. Reasons for an inconclusive conclusion include the presence of microscopic similarity that is insufficient to form the conclusion of source identification, or a lack of any observed microscopic similarity. Limitations: Pattern Examination: Firearms/Toolmark Identification is an empirical science that relies on objective measurements and a subjective comparison of microscopic marks of value. Due to variations in substrate, changes in tool working surfaces from wear, corrosion, subclass, damage, or the employment of unusual tool/work piece orientations, toolmark reproduction may be incomplete or insufficient, as a result it may not be possible for an examiner to reach a source conclusion. Additionally, some tool manufacturing methods routinely produce working surfaces that leave limited microscopic marks of value. Damaged, corroded, or fragmented items may be of little or no value for comparison purposes. Virtual Comparison Microscopy: Virtual Comparison Microscopy (VCM) is restricted to the surface that a three-dimensional toolmark topographical instrument is capable of measuring to produce a digital reproduction. Additionally, individual characteristics may be present on the evidentiary item but may not be reproduced during a scan. This may be due to interference from lacquer/sealant, environmental damage, debris, or measuring limits for an instrument. Furthermore, physical</p>

TABLE 3

WebCode	Additional Comments
	characteristics that are not measurable, such as the metallic qualities of an item, may not be available for evaluation in the digital reproduction.
EA3R2Z	Item 5 could not be eliminated as having been fired in the same firearm as Items 1 or 3 due to unknown markings with agreement in the head stamp area. Items 1B, 1C, 3, and 5 have unknown manufacturing marks in the head stamp that show agreement.
FKU3H7	Item 2, 4 y 5: Do not present ballistic correlation with Item 1.
FPU8GJ	Laboratory does not eliminate on individual characteristics without reproducibility.
FVE69D	The cartridge cases from Item 2 and Item 4 were discharged by the same firearm, but not the same as the known test-fired cartridge casings (Item 1). The cartridge case from Item 5 was discharged by another firearm, not the one that fired the cartridge cases from Item 2 and Item 4, nor the one that fired the known test-fired cartridge casings (Item 1). So, there are two more firearms that have been used in this case.
GFJ6VJ	Items 1 and 3 had agreement of a combination of individual characteristics and all discernible class characteristics where the extent of agreement exceeds that which can occur in the comparison of toolmarks made by different tools and is consistent with the agreement demonstrated by toolmarks known to have been produced by the same tool. Items 1 and 2 had significant disagreement of discernible class characteristics and/or individual characteristics. Items 1 and 4 had significant disagreement of discernible class characteristics and/or individual characteristics. Items 1 and 5 had significant disagreement of discernible class characteristics and/or individual characteristics.
GJGNWW	1 Practical Certainty: Since it is not possible to collect and examine samples of all firearms, it is not possible to make an identification with absolute certainty. However, all scientific research and testing to date and the continuous inability to disprove the principles of toolmark analysis have demonstrated that firearms produce unique, identifiable characteristics which allow examiners to reliably make identifications. Firearms/Toolmark Identification is an empirical science that relies on objective observations and a subjective interpretation of microscopic marks of value.
HGTDE4	Item #3 was fired from the known firearm. Item #2 and #4 were fired from the same firearm, but not from the known firearm. Item #5 was not fired from the known firearm, but from a different weapon.
HH74N8	The four 9mm Luger cartridge cases recovered from the scene (items 2 through 5) were compared microscopically to each other and to the three 9mm Luger cartridges fired in the Taurus Millennium PT-111 Pro (Item 1). Item 3 was identified as being fired in the same firearm as Item 1 based on agreement of class characteristics and sufficient corresponding individual detail observed in firing pin impressions and breechface marks. Items 2, 4, and 5 were eliminated as being fired in the same firearm as Item 1 based on disagreement of class and individual characteristics observed in firing pin aperture marks, firing pin impressions, or breechface marks. Item 2 and 4 were identified as being fired in the same firearm based on agreement of class characteristics and sufficient corresponding individual detail observed in firing pin aperture marks and breechface marks. Item 5 was eliminated as being fired in the same firearm as items 2 and 4 based on disagreement of class and individual characteristics observed in firing pin aperture marks, firing pin impressions and breechface marks. Associations and other results reported in this examination are based on the AFTE Theory of Identification and its Range of Conclusions. This basis enables opinions of common origin when unique surface contours of two toolmarks are in sufficient agreement.

TABLE 3

WebCode	Additional Comments
HL6EJ8	As mentioned in the response to question 2 [Table 2: Conclusions], the identification of Item 3 to the same firearm as the known test-fired cartridge cases (Item 1) was made assuming that the marks were not subject to subclass carryover and were individual in nature.
HL6G8Q	The cartridge cases in Items 2 and 4 were fired in the same gun, based on agreement observed in individual characteristics.
HVU66E	There are areas on the cartridge case heads displaying agreement of the markings on Q2-Q4 and two of the test fires T1-T2. The origin of these markings are unknown and when the markings are aligned the orientation of the cartridge cases are out of phase.
K72UVF	Our lab does not eliminate based on individual characteristics without sufficient reproducibility (Item 5 is only item in that group).
K7GXLZ	ESPAÑOL: ELEMENTO 1 VS ARTICULO 3: IDENTIFICACIÓN ARTICULO 2 VS 4: IDENTIFICACIÓN ARTICULO 5 ELIMINACIÓN CON ELEMENTO 1, ARTICULO 2, ARTICULO 3, ARTICULO 4 Y ARTICULO 5. ENGLISH: LEMENT 1 VS ARTICLE 3: IDENTIFICATION ARTICLE 2 VS 4: IDENTIFICATION ARTICLE 5 ELIMINATION WITH ELEMENT 1, ARTICLE 2, ARTICLE 3, ARTICLE 4 AND ARTICLE 5.
K9P8W7	Methods: Pattern Examination: Toolmarks, whether they are present on evidence items or secondary evidence created in the Laboratory, undergo two stages of comparison. First, the class characteristics are examined and compared. If the class characteristics of the toolmarks are not clearly different, the examination moves to a second stage using comparative microscopy. Comparative examinations of the impressed and striated toolmarks, in at least two items, are conducted to determine if patterns of similarity exist. At the completion of these comparisons, one of the following three opinions is issued: 1) Source Exclusion: Source exclusion is an Examiner's conclusion that two toolmarks did not originate from the same source. This conclusion is an Examiner's opinion that the observed difference(s) in class characteristics provides extremely strong support for the proposition that the two toolmarks came from different sources and extremely weak or no support for the proposition that the two toolmarks came from the same source. A source exclusion based on a minor difference in measured class characteristics requires a verification. 2) Source Identification: Source identification is an Examiner's conclusion that two toolmarks originated from the same source. This conclusion is an Examiner's opinion that all observed class characteristics are in agreement and the quality and quantity of corresponding individual characteristics is such that the Examiner would not expect to find that same combination of individual characteristics repeated in another source. The basis for a source identification conclusion is an Examiner's opinion that the observed class characteristics and corresponding individual characteristics provide extremely strong support for the proposition that the two toolmarks originated from the same source and extremely weak support for the proposition that the two toolmarks originated from different sources. A source identification requires a verification and is the Examiner's opinion that the probability that the two toolmarks were made by different sources is so small that it is negligible. 3) Inconclusive: Inconclusive is an Examiner's conclusion that all observed class characteristics are in agreement but there is insufficient quality and/or quantity of corresponding individual characteristics such that the Examiner is unable to identify or exclude the two toolmarks as having originated from the same source. This conclusion is an Examiner's opinion that there is an insufficient quality and/or quantity of individual characteristics to identify or exclude. Reasons for an inconclusive conclusion include the presence of microscopic similarity that is insufficient to form the conclusion of source identification, or a lack of any observed microscopic similarity. Limitations: Pattern Examination: Firearms/Toolmark Identification is an empirical science that relies on objective

TABLE 3

WebCode	Additional Comments
	measurements and a subjective comparison of microscopic marks of value. Due to variations in substrate, changes in tool working surfaces from wear, corrosion, subclass, damage, or the employment of unusual tool/work piece orientations, toolmark reproduction may be incomplete or insufficient, as a result it may not be possible for an examiner to reach a source conclusion. Additionally, some tool manufacturing methods routinely produce working surfaces that leave limited microscopic marks of value. Damaged, corroded, or fragmented items may be of little or no value for comparison purposes.
KTCV7X	#2 thru #5 – 9mm Luger caliber DCCs, headstamped FC. BC/NP hemispherical FPI w/ circular FPA. #2 and #4 granular BF, #3 and #5 parallel BF. #1 – (3) 9mm Luger caliber DCCs, headstamped FC. BC/NP hemispherical FPI w/ circular FPA. COMPARISONS LEEDS LCF3 #484995 All Power Utilized #2 vs #3 – Neg (-) Elimination: Differences in CCs BF (Granular vs Parallel). Gross differences in ICs w/in FPI #2 vs #4 – Pos (+) Identification: Sufficient Agreement of ICs w/in BF, FPI, CMs #2 vs #5 – Neg (-) Elimination: Differences in CCs BF (Granular vs Parallel). Gross differences in ICs w/in FPI #1 T1(Red) vs #3 – Pos (+) Identification: Sufficient Agreement of ICs w/in BF, FPI, FPD #1 T1(Red) vs #2, #4 – Elimination: Differences in CCs BF (Granular vs Parallel). Gross differences in ICs w/in FPI #1 T1(Red) vs #5 – Neg (-) Elimination: Gross differences in ICs w/in BF & FPI. [Participant submitted data in a format that could not be reproduced in this report.]
KVYJHX	ALSO AS OBSERVED BY COMPARISON, THERE IS IDENTITY BETWEEN THE CARTRIDGE BUSHINGS OF ITEM 2 WITH THE CARTRIDGE BUSHINGS OF ITEM 4.
MFFQNC	Item 2 and 4 seem to have been discharged from the same weapon.
NJUL7U	The item 2 and 4, was discharged from the same firearm.
NMG6CX	In my opinion, at least three 9mm Parabellum calibre self-loading pistols were discharged during this incident: Gun 1 fired one shot; Gun 2 fired two shots; Gun 3 fired one shot.
PEXFNA	While our laboratory policy allows examiners to eliminate two items if the class characteristics are the same and individual are different, in practice we do not eliminate on individual if we only have one item. Meaning we need to see reproducibility amongst two items at minimum and then will eliminate on individual between the groups.
PGLTPZ	Methods: Pattern Examination Toolmarks, whether they are present on evidence items or secondary evidence created in the Laboratory, undergo two stages of comparison. First, the class characteristics are examined and compared. If the class characteristics of the toolmarks are not clearly different, the examination moves to a second stage using comparative microscopy. Comparative examinations of the impressed and striated toolmarks, in at least two items, are conducted to determine if patterns of similarity exist. At the completion of these comparisons, one of the following three opinions is issued: 1) Source Exclusion: Source exclusion is an Examiner's conclusion that two toolmarks did not originate from the same source. This conclusion is an Examiner's opinion that the observed difference(s) in class characteristics provides extremely strong support for the proposition that the two toolmarks came from different sources and extremely weak or no support for the proposition that the two toolmarks came from the same source. A source exclusion based on a minor difference in measured class characteristics requires a verification. 2) Source Identification: Source identification is an Examiner's conclusion that two toolmarks originated from the same source. This conclusion is an Examiner's opinion that all observed class characteristics are in agreement and the quality and quantity of corresponding individual characteristics is such that the Examiner would not expect to find that same combination of individual characteristics



TABLE 3

WebCode	Additional Comments
	<p>repeated in another source. The basis for a source identification conclusion is an Examiner's opinion that the observed class characteristics and corresponding individual characteristics provide extremely strong support for the proposition that the two toolmarks originated from the same source and extremely weak support for the proposition that the two toolmarks originated from different sources. A source identification requires a verification and is the Examiner's opinion that the probability that the two toolmarks were made by different sources is so small that it is negligible. 3) Inconclusive: Inconclusive is an Examiner's conclusion that all observed class characteristics are in agreement but there is insufficient quality and/or quantity of corresponding individual characteristics such that the Examiner is unable to identify or exclude the two toolmarks as having originated from the same source. This conclusion is an Examiner's opinion that there is an insufficient quality and/or quantity of individual characteristics to identify or exclude. Reasons for an inconclusive conclusion include the presence of microscopic similarity that is insufficient to form the conclusion of source identification, or a lack of any observed microscopic similarity. Limitations: Pattern Examination: Firearms/Toolmark Identification is an empirical science that relies on objective measurements and a subjective comparison of microscopic marks of value. Due to variations in substrate, changes in tool working surfaces from wear, corrosion, subclass, damage, or the employment of unusual tool/work piece orientations, toolmark reproduction may be incomplete or insufficient, as a result it may not be possible for an examiner to reach a source conclusion. Additionally, some tool manufacturing methods routinely produce working surfaces that leave limited microscopic marks of value. Damaged, corroded, or fragmented items may be of little or no value for comparison purposes. Virtual Comparison Microscopy: Virtual Comparison Microscopy (VCM) is restricted to the surface that a three-dimensional toolmark topographical instrument is capable of measuring to produce a digital reproduction. Additionally, individual characteristics may be present on the evidentiary item but may not be reproduced during a scan. This may be due to interference from lacquer/sealant, environmental damage, debris, or measuring limits for an instrument. Furthermore, physical characteristics that are not measurable, such as the metallic qualities of an item, may not be available for evaluation in the digital reproduction.</p>
QD6MTQ	<p>The quality of the samples was good. The difficulty of the test was appropriate.</p>
QEBECR	<p>Methods: Pattern Examination: Toolmarks, whether they are present on evidence items or secondary evidence created in the Laboratory, undergo two stages of comparison. First, the class characteristics are examined and compared. If the class characteristics of the toolmarks are not clearly different, the examination moves to a second stage using comparative microscopy. Comparative examinations of the impressed and striated toolmarks, in at least two items, are conducted to determine if patterns of similarity exist. At the completion of these comparisons, one of the following three opinions is issued: 1) Source Exclusion: Source exclusion is an Examiner's conclusion that two toolmarks did not originate from the same source. This conclusion is an Examiner's opinion that the observed difference(s) in class characteristics provides extremely strong support for the proposition that the two toolmarks came from different sources and extremely weak or no support for the proposition that the two toolmarks came from the same source. A source exclusion based on a minor difference in measured class characteristics requires a verification. 2) Source Identification: Source identification is an Examiner's conclusion that two toolmarks originated from the same source. This conclusion is an Examiner's opinion that all observed class characteristics are in agreement and the quality and quantity of corresponding individual characteristics is such that the Examiner would not expect to find that same combination of individual characteristics repeated in another source. The basis for a source identification conclusion is an Examiner's</p>

TABLE 3

WebCode	Additional Comments
	<p>opinion that the observed class characteristics and corresponding individual characteristics provide extremely strong support for the proposition that the two toolmarks originated from the same source and extremely weak support for the proposition that the two toolmarks originated from different sources. A source identification requires a verification and is the Examiner's opinion that the probability that the two toolmarks were made by different sources is so small that it is negligible. 3) Inconclusive: Inconclusive is an Examiner's conclusion that all observed class characteristics are in agreement but there is insufficient quality and/or quantity of corresponding individual characteristics such that the Examiner is unable to identify or exclude the two toolmarks as having originated from the same source. This conclusion is an Examiner's opinion that there is an insufficient quality and/or quantity of individual characteristics to identify or exclude. Reasons for an inconclusive conclusion include the presence of microscopic similarity that is insufficient to form the conclusion of source identification, or a lack of any observed microscopic similarity. Limitations: Pattern Examination: Firearms/Toolmark Identification is an empirical science that relies on objective measurements and a subjective comparison of microscopic marks of value. Due to variations in substrate, changes in tool working surfaces from wear, corrosion, subclass, damage, or the employment of unusual tool/work piece orientations, toolmark reproduction may be incomplete or insufficient, as a result it may not be possible for an examiner to reach a source conclusion. Additionally, some tool manufacturing methods routinely produce working surfaces that leave limited microscopic marks of value. Damaged, corroded, or fragmented items may be of little or no value for comparison purposes.</p>
QPY4HR	Summary: #1 ID #3. #2 ID #4. #1 & #3 Elim #2 & #4. #5 Elim #1 thru #4.
QYHFU6	Item 1: Three test fires from K-1. Item 2: One cartridge case marked QC-1. QC-1 is a caliber 9 mm Luger cartridge case bearing the "FC" headstamp of Federal. Item 3: One cartridge case marked QC-2. QC-2 is a caliber 9 mm Luger cartridge case bearing the "FC" headstamp of Federal. Item 4: One cartridge case marked QC-3. QC-3 is a caliber 9 mm Luger cartridge case bearing the "FC" headstamp of Federal. Item 5: One cartridge case marked QC-4. QC-4 is a caliber 9 mm Luger cartridge case bearing the "FC" headstamp of Federal.
RHVG4X	The tool marks on the Item No 05 are insufficient for microscopic comparison.
TFXQBN	The questioned recovered cartridge casings labeled "Item 2" and "Item 4" were discharged from the same firearm.
UGQ49Z	The hypothesis that cartridge cases item 2 and item 4 were fired from the same firearm is very strongly supported. The hypothesis that cartridge case item 5 was fired from a third firearm is very strongly supported.
UR7Y6Q	Items 1, 3 and 5 have similar marks in the breach face (not in the primer) that we think comes from manufacturing of the cartridge.
WX7XTL	The vanilla item No. 2 gives a positive result for a second firearm with the vanilla item No. 4. The vanilla of item No. 5 gives results for a third firearm different from the one that struck the vanillas of item No. 2, 3 and 4.
WYZG2E	Similarities have been observed between the marks in the cartridge cases Items 2 and 4. This observation lead to an additional examination between the marks in Item 2 and 4. The findings of this examination were viewed under the following two hypotheses: H3: The questioned cartridges case are fired by one firearm. H4: The questioned cartridge cases are fired by two firearms of the same calibre and with the same class characteristics. The findings

TABLE 3

WebCode	Additional Comments
X3XHG3	of the additional examination are extremely more probable when H3 is true than when H4 is true. Item 5 is fired by a third firearm.
XFKMQJ	Inconclusive was chosen due to similar class characteristics and some individual characteristics. I was leaning towards Elimination but decided to choose inconclusive as I did find some small areas lining up.
XJ88VN	The items 2 and 4 were discharged from the same firearm. Item 5 was not discharged by the firearm that discharged the items 2 and 4.
Y4LHQH	Item 2 cartridge case was fired as the Item4 cartridge case.  Methods: Pattern Examination: Toolmarks, whether they are present on evidence items or secondary evidence created in the Laboratory, undergo two stages of comparison. First, the class characteristics are examined and compared. If the class characteristics of the toolmarks are not clearly different, the examination moves to a second stage using comparative microscopy. Comparative examinations of the impressed and striated toolmarks, in at least two items, are conducted to determine if patterns of similarity exist. At the completion of these comparisons, one of the following three opinions is issued: 1) Source Exclusion: Source exclusion is an Examiner's conclusion that two toolmarks did not originate from the same source. This conclusion is an Examiner's opinion that the observed difference(s) in class characteristics provides extremely strong support for the proposition that the two toolmarks came from different sources and extremely weak or no support for the proposition that the two toolmarks came from the same source. A source exclusion based on a minor difference in measured class characteristics requires a verification. 2) Source Identification: Source identification is an Examiner's conclusion that two toolmarks originated from the same source. This conclusion is an Examiner's opinion that all observed class characteristics are in agreement and the quality and quantity of corresponding individual characteristics is such that the Examiner would not expect to find that same combination of individual characteristics repeated in another source. The basis for a source identification conclusion is an Examiner's opinion that the observed class characteristics and corresponding individual characteristics provide extremely strong support for the proposition that the two toolmarks originated from the same source and extremely weak support for the proposition that the two toolmarks originated from different sources. A source identification requires a verification and is the Examiner's opinion that the probability that the two toolmarks were made by different sources is so small that it is negligible. 3) Inconclusive: Inconclusive is an Examiner's conclusion that all observed class characteristics are in agreement but there is insufficient quality and/or quantity of corresponding individual characteristics such that the Examiner is unable to identify or exclude the two toolmarks as having originated from the same source. This conclusion is an Examiner's opinion that there is an insufficient quality and/or quantity of individual characteristics to identify or exclude. Reasons for an inconclusive conclusion include the presence of microscopic similarity that is insufficient to form the conclusion of source identification, or a lack of any observed microscopic similarity. Limitations: Pattern Examination: Firearms/Toolmark Identification is an empirical science that relies on objective measurements and a subjective comparison of microscopic marks of value. Due to variations in substrate, changes in tool working surfaces from wear, corrosion, subclass, damage, or the employment of unusual tool/work piece orientations, toolmark reproduction may be incomplete or insufficient, as a result it may not be possible for an examiner to reach a source conclusion. Additionally, some tool manufacturing methods routinely produce working surfaces that leave limited microscopic marks of value. Damaged, corroded, or fragmented items may be of little or no value for comparison purposes. Virtual Comparison Microscopy

TABLE 3

WebCode	Additional Comments
	Virtual Comparison Microscopy (VCM) is restricted to the surface that a three-dimensional toolmark topographical instrument is capable of measuring to produce a digital reproduction. Additionally, individual characteristics may be present on the evidentiary item but may not be reproduced during a scan. This may be due to interference from lacquer/sealant, environmental damage, debris, or measuring limits for an instrument. Furthermore, physical characteristics that are not measurable, such as the metallic qualities of an item, may not be available for evaluation in the digital reproduction.
YM3FFN	Sub-class observed in ammunition manufacturing marks on the breechfaces of Items 2 through 5, and one (1) of the Item 1 test fired cartridge cases.
YQ3QBN	The evidence F#2 with digits #1, #2, #3, #4 and #5 are seven (7) shells, parts of 9x19mm caliber pelliars. They were fired from three (3) different weapons, certainly pistols of the same calibre 9x19mm, where four of the shells subject to examination evidence recorded with digits #1 and #3 were fired from a gun of the same caliber 9x19mm and two other shell casings evidenced with digits #2 and #4 were fired from another weapon of the same caliber 9x19mm, While one (1) shell with the digit #5 is fired by a gun of the same caliber 9x19mm. Translated from Google Translate.
Z8JAJF	Test carried out: 1.Physical Examination 2.Digital Micrometer 3.Comparison Macroscop
ZD9UKA	The Items 2 and Items 4 were discharged from second firearm and the Item 5 was discharged from third firearm.
ZUFNFQ	el ítem 3 fue percutido por el arma de fuego con ítem 1. [Translation by CTS: Item 3 was fired by the same firearm as Item 1.]

-End of Report-  
(Appendix may follow)

Collaborative Testing Services ~ Forensic Testing Program

**Test No. 24-5262: Firearms Examination**

DATA MUST BE SUBMITTED BY **Dec. 16, 2024, 11:59 p.m. EST** TO BE INCLUDED IN THE REPORT

Participant Code: U1234A

WebCode: G94G33

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

**Scenario:**

Police recovered four cartridge casings from a crime scene and seized a Taurus Millennium PT-111 Pro firearm from a suspect's possession who was apprehended later that day. Three rounds of Federal American Eagle 9mm Luger 124 grain FMJ ammunition (consistent with the cartridge casings found at the scene) were test fired with the suspect's firearm and the cartridge casings collected. Investigators are asking you to compare the recovered cartridge casings from the scene with those that were test fired from the suspect's firearm and report your findings.

*Please not the following:*

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

**Items Submitted (Sample Pack F2):**

Item 1: Three known test-fired cartridge casings discharged from the suspect's firearm.

Item 2: Questioned recovered cartridge case.

Item 3: Questioned recovered cartridge case.

Item 4: Questioned recovered cartridge case.

Item 5: Questioned recovered cartridge case.

**1.) Were any of the questioned recovered cartridge casings (Items 2-5) discharged from the same firearm as the known test-fired cartridge casings (Item 1)?**

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

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

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

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

**3.) Additional Comments**

## RELEASE OF DATA TO ACCREDITATION BODIES

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

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

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

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

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

ANAB Certificate No.

A2LA Certificate No.

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

Authorized Contact Person and Title

Laboratory Name

Location (City/State)