Collaborative Testing Services, Inc
FORENSIC TESTING PROGRAM

P.O. Box 650820
Sterling, VA 20165-0820
e-mail: forensics@cts-interlab.com
Telephone: +1-571-434-1925
Web site: www.cts-forensics.com

Firearms Examination
Test No. 25-5262 Summary Report

Each participant received a sample pack containing three known test-fires and four questioned recovered items, which they 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 295 participants and are compiled into the following tables:

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

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

Manufacturer's Information

Each sample pack contained 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 numbers 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 numbers 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.

Item	Known/ Questioned	Identification/ Elimination	Firearm	Ammunition	Ammunition Component
1	Known	--	Sig Sauer P365	PMC Bronze 9mm Luger 115 gr FMJ	Bullets
2	Questioned	Elimination	Star Model BM	PMC Bronze 9mm Luger 115 gr FMJ	Bullets
3	Questioned	Identification	Sig Sauer P365	PMC Bronze 9mm Luger 115 gr FMJ	Bullets
4	Questioned	Elimination	Taurus G2c	PMC Bronze 9mm Luger 115 gr FMJ	Bullets
5	Questioned	Elimination	Taurus G2c	PMC Bronze 9mm Luger 115 gr FMJ	Bullets

Summary Comments

This test was designed to allow participants to assess their proficiency at a firearms examination involving a comparison of recovered bullets. Participants were supplied with three known test-fired bullets (Item 1) and four questioned recovered bullets (Items 2 through 5). The bullets from Item 3 were discharged from the same firearm as the Item 1 known test-fires. The bullets from Items 4 and 5 were discharged from a second firearm, while Item 2 was discharged from a third, unrelated firearm. Refer to the Manufacturer's Information for preparation details.

In Table 1: Examination Results, 287 of the 295 participants (97%) identified Item 3 and either eliminated or reported inconclusive for Items 2, 4 and 5 as being discharged from the same firearm as the Item 1 known test-fired bullets. Of those participants, four did not provide a response in Table 1, but did report their item eliminations in Table 2: Conclusions. For the remaining eight participants, four eliminated Item 2 and identified Items 3 through 5, three reported inconclusive for Item 3 and eliminated Items 2, 4 and 5, and the last participant identified Items 3 and 4 and eliminated Items 2 and 5.

Examination Results

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

TABLE 1

WebCode	Item 2	Item 3	Item 4	Item 5	WebCode	Item 2	Item 3	Item 4	Item 5
223DVA	No	Yes	No	No	6V9F6M	No	Yes	Inc	Inc
22T6E9	No	Yes	No	No	6XCD8P	No	Yes	Inc	Inc
26ZWW9	No	Yes	No	No	786LZ7	No	Yes	No	No
28GPKA	No	Yes	No	No	7F6DWZ	No	Yes	No	No
2GGJ9U	No	Yes	No	No	7K2ZQP	No	Yes	No	No
2GMU9K	No	Yes	No	No	7NNDY7	No	Yes	No	No
33DH9X	No	Yes	No	No	7T3A68	No	Yes	No	No
3GW3Q7	No	Yes	Yes	Yes	7UUB9A	No	Yes	No	No
3GZHBW	No	Yes	No	No	7VPUAB	No	Yes	No	No
3MZ8HQ	No	Yes	No	No	7X8DMF	No	Yes	No	No
3NJQVM	No	Yes	No	No	7XP27V	No	Yes	No	No
3XGTP7	No	Yes	No	No	82CYH7	No	Yes	Inc	Inc
47YEK9	No	Yes	No	No	88XYWX	No	Yes	No	No
4CBZYR	No	Yes	No	No	8ACT7P	No	Yes	No	No
4D7HZT	No	Yes	Inc	Inc	8CTLUR	No	Yes	No	No
4GWHMG	No	Yes	No	No	8F7NCG	No	Yes	No	No
4JFGU8	No	Yes	No	No	8GU4H7	No	Yes	No	No
4JVV2G	No	Yes	Inc	Inc	8PUGND	No	Yes	No	No
4JVZE4	No	Yes	No	No	8THTP6	No	Yes	Inc	Inc
4KT4DJ	No	Yes	No	No	8UAR33	No	Yes	No	No
4MC3LA	No	Yes	Inc	Inc	8ZFLVD	No	Yes	No	No
4U47YK	No	Yes	No	No	98NEHF	No	Yes	Inc	Inc
4W6EXQ	No	Yes	No	No	9BRB99	No	Yes	No	No
4WAUEA	No	Yes	No	No	9EU9HF	No	Yes	No	No
69JN8E	No	Yes	No	No	9FQQJH	No	Yes	No	No
6KP247	No	Yes	No	No	9HCBPL	No	Yes	Inc	No
6LHUYN	No	Yes	No	No	9HRU9J	No	Yes	No	No

TABLE 1

WebCode	Item 2	Item 3	Item 4	Item 5	WebCode	Item 2	Item 3	Item 4	Item 5
9JLDEQ	No	Yes	No	No	DAHU2C	No	Yes	No	No
9PL2LJ	No	Yes	No	No	DCAV6F	No	Yes	No	No
9TWKDF	No	Yes	No	No	DDMK77	No	Yes	No	No
9VFWRB	No	Yes	No	No	DEQG8N	No	Yes	No	No
9Y49T3	No	Yes	No	No	DJJGN6	No	Yes	No	No
9ZBLA4	No	Yes	No	No	DLFVF2		Yes		
ABHXUX	No	Yes	No	No	DLWPJW	No	Yes	No	No
ADNK83	No	Yes	No	No	DNXWFG	No	Yes	No	No
AGFCPD	No	Yes	Inc	Inc	DQ4G2W	No	Yes	No	No
APT782	No	Yes	No	No	DQ6CP9	No	Yes	No	No
AXZ3PD	No	Yes	No	No	DWB6J4	No	Yes	Inc	Inc
B8ELDN	No	Yes	No	No	E7VY87	No	Yes	No	No
BB2Z3Y	No	Yes	No	No	EG2GB9	No	Yes	No	No
BCT272	No	Yes	No	No	EHUBBX	No	Yes	No	No
BFXKE9	No	Yes	Inc	Inc	EQ4ZNW	No	Yes	No	No
BQHXR7	No	Yes	No	No	EUZK99	No	Yes	No	No
BRMLPA	No	Yes	No	No	EVK3V2	No	Yes	Yes	Yes
BTYF6B	No	Yes	No	No	EWNYWJ	No	Yes	No	No
C3FMEJ	No	Yes	No	No	EZQZWF	No	Yes	No	No
C76U87	No	Yes	No	No	F7U4KT	No	Yes	Yes	Yes
CFFWR8	No	Yes	No	No	F7XNH8	No	Yes	No	No
CHY99N	No	Yes	No	No	FAUA47	No	Yes	No	No
CK7BET	No	Yes	No	No	FH37LG	No	Yes	No	No
CNK6PL	No	Yes	No	No	FQEZ36	No	Yes	Inc	Inc
CPK2KN	No	Yes	No	No	FRD63K	No	Yes	No	No
CTGPYA	No	Yes	No	No	FRTQA2	No	Yes	Inc	Inc
CVJPRG	No	Yes	No	No	FWMK83	No	Yes	No	No
CXBPD6		Yes			FXCT9D	No	Yes	No	No
D3ZJQW	No	Yes	No	No	G6GRP9	No	Yes	No	No

TABLE 1

WebCode	Item 2	Item 3	Item 4	Item 5	WebCode	Item 2	Item 3	Item 4	Item 5
G6ZVX9	No	Yes	No	No	KAKRGF	No	Yes	No	No
G7N9GD	No	Yes	No	No	KCK6R9	No	Yes	No	No
GEYTF4	No	Yes	No	No	KCPK79	No	Yes	No	No
GHULBJ	No	Yes	Inc	Inc	KCZQZP	No	Yes	No	No
GR6NWK	No	Yes	Inc	Inc	KEDW8Y	No	Yes	No	No
GTZ8XL	No	Yes	No	No	KJMCE3	No	Yes	No	No
GW4XB7	No	Yes	No	No	KN2PJV	No	Yes	No	No
GYRACW	No	Yes	No	No	KPCPGP	No	Yes	No	No
H2R3HZ	No	Yes	No	No	KQ6HFF	No	Yes	No	No
HECJ4E	No	Yes	No	No	KT8MKA	No	Yes	No	No
HG9V9R	No	Yes	No	No	KU6UAU	No	Yes	Inc	Inc
HQVU2J	No	Yes	No	No	KW48M9	No	Yes	No	No
HWUH9C	No	Yes	No	No	KWMDLY	No	Yes	Inc	Inc
HZT29P	No	Yes	No	No	KXZPPA	No	Yes	No	No
J3KDTT	No	Yes	Inc	Inc	KZAV83	No	Yes	Inc	Inc
J4FVVV	No	Yes	No	No	L4BXVJ	No	Yes	No	No
J72FZY	No	Yes	Inc	Inc	L9CCBF	No	Inc	No	No
J77XYX	No	Yes	No	No	LAFUJP	No	Yes	No	No
JACVZC	No	Yes	No	No	LBQW6N	No	Yes	No	No
JAX9NP	No	Yes	No	No	LDE97E	No	Yes	No	No
JCUKU3	No	Yes	No	No	LEPBTD	No	Yes	No	No
JRF3GY	No	Yes	Inc	Inc	LJDWD9	No	Yes	No	No
JTF3M4	No	Yes	No	No	LKCZCN	No	Yes	No	No
JZC6GP	No	Yes	No	No	M9YXQQ	No	Yes	Inc	Inc
JZCZ42	No	Yes	No	No	MEGUMD	No	Yes	No	No
K63W7X	No	Yes	No	No	MFWPXY	No	Yes	No	No
K7XE8Y	No	Yes	No	No	MH7YPV	No	Yes	Inc	Inc
K8RYGQ	No	Yes	No	No	MN6NWP	No	Yes	No	No
K8WFFP	No	Yes	No	No	MPYCG6	No	Yes	No	No

TABLE 1

WebCode	Item 2	Item 3	Item 4	Item 5	WebCode	Item 2	Item 3	Item 4	Item 5
MQF4Z2	No	Yes	No	No	QCFV3V	No	Yes	No	No
MWW4NE	No	Yes	No	No	QED6GK	No	Yes	No	No
N6UUEU	No	Yes	No	No	QG9X4A	No	Yes	No	No
NANLNC	No	Yes	No	No	QP36MF	No	Yes	No	No
NAYRF9	No	Yes	No	No	QP4ZBR	No	Yes	No	No
NB9WTW	No	Yes	No	No	QUK3GX	No	Yes	No	No
NDRLK3	No	Yes	No	No	QUK9UL	No	Yes	No	No
NFD7Q7	No	Yes	No	No	QWTG8P	No	Yes	No	No
NFNAV6	No	Yes	No	No	R2DZFK	No	Yes	No	No
NFTPCP		Yes			R6CBBK	No	Yes	No	No
NJR29P	No	Yes	No	No	RAUCXR	No	Yes	No	No
NMDKDT	No	Yes	No	No	RGY9NH	No	Yes	No	No
NPHBHM		Yes			RHR3N8	No	Yes	No	No
NRJHE8	No	Yes	No	No	RKVUFK	No	Yes	No	No
NTE2G9	No	Yes	No	No	RQE3WQ	No	Yes	No	No
NY9YB6	No	Yes	No	No	RRE33V	No	Yes	No	No
P63KA6	No	Yes	No	No	RU7W2L	No	Yes	No	No
PFNMZP	No	Yes	No	No	RVEC9R	No	Yes	No	No
PFPKBL	No	Yes	No	No	RVNFEP	No	Yes	No	No
PLAJKT	No	Yes	No	No	RXKU62	No	Yes	No	No
PQRHJU	No	Yes	No	No	RYDM4R	No	Yes	No	No
PZPKDD	No	Yes	No	No	T46AD7	No	Yes	No	No
Q2KLZU	No	Yes	No	No	T4PQT9	No	Yes	Yes	Yes
Q69X2K	No	Yes	No	No	T7LL4G	No	Yes	No	No
Q6FGFA	No	Yes	No	No	TADDLT	No	Yes	No	No
Q8CTKM	No	Yes	No	No	TAPEZ2	No	Yes	No	No
Q9GHGR	No	Yes	Inc	Inc	TCEJZY	No	Yes	No	No
Q9GK8V	No	Yes	Inc	Inc	TCYE78	No	Yes	No	No
QBXCQR	No	Yes	Inc	Inc	TLKK2P	No	Yes	No	No

TABLE 1

WebCode	Item 2	Item 3	Item 4	Item 5
TMDDTP	No	Yes	Inc	Inc
TVB77N	No	Yes	No	No
TZPJAV	No	Yes	No	No
U3GAM8	No	Yes	No	No
U7PKKA	No	Yes	No	No
U8QTJF	No	Yes	No	No
UAGUMH	No	Yes	No	No
UB6VZY	No	Yes	No	No
UCLG38	No	Yes	No	No
ULB8ME	No	Yes	No	No
ULURWR	No	Yes	No	No
UMVKZ6	No	Yes	No	No
UPBJHE	No	Inc	No	No
UV2TTD	No	Yes	No	No
UYQYXG	No	Yes	No	No
UZF483	No	Yes	No	No
UZVPG4	No	Yes	No	No
V3HMQT	No	Yes	No	No
V63DV6	No	Yes	No	No
V7GZ7R	No	Yes	No	No
V8VAHE	No	Yes	No	No
V8YPXX	No	Yes	No	No
V96EV3	No	Yes	No	No
VBZTPK	No	Yes	No	No
VEQ86G	No	Yes	No	No
VF9EDH	No	Yes	No	No
VJMTX6	No	Yes	No	No
VMM6U6	No	Yes	No	No
VVKVKK	No	Yes	No	No
VZPTLY	No	Yes	No	No
W9Q9EP	No	Yes	No	No
WHQXQL	No	Yes	No	No
WJWK4Q	No	Yes	No	No
WQ22Y7	No	Yes	No	No
WQ7GFQ	No	Yes	No	No
WT4Z9D	No	Yes	No	No
X2XRTC	No	Yes	No	No
X43FBN	No	Yes	No	No
X7DZJX	No	Yes	No	No
XFEHWL	No	Yes	No	No
XFH3RE	No	Yes	No	No
XGAZYM	No	Yes	No	No
XJ6MXH	No	Yes	No	No
XMYHCX	No	Yes	No	No
XNAKYW	No	Yes	No	No
XXUWAA	No	Yes	No	No
XYPECB	No	Yes	No	No
XZNDWH	No	Yes	Yes	No
Y6HULG	No	Yes	No	No
YH649L	No	Yes	No	No
YHZL6J	No	Yes	Inc	Inc
YQJXJV	Inc	Yes	Inc	Inc
YVAZRN	No	Yes	No	No
YVT7TZ	No	Yes	No	No
YXAD63	No	Inc	No	No
Z36J8P	No	Yes	No	No
Z3RTHE	No	Yes	No	No
ZAPMER	No	Yes	No	No

TABLE 1

WebCode	Item 2	Item 3	Item 4	Item 5	WebCode	Item 2	Item 3	Item 4	Item 5
ZF4PTU	No	Yes	No	No					
ZGQYAN	No	Yes	No	No					
ZKPB7N	No	Yes	No	No					
ZLKT8P	No	Yes	No	No					
ZN8DDU	No	Yes	No	No					
ZRNXYA	No	Yes	No	No					
ZUGQYY	No	Yes	No	No					
ZWCGXK	No	Yes	Inc	Inc					
ZZTNGD	No	Yes	No	No					

Response Summary

Participants: 295

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

	Item 2	Item 3	Item 4	Item 5
Yes	**0** *(0.0%)*	**292** *(99.0%)*	**5** *(1.7%)*	**4** *(1.4%)*
No	**290** *(98.3%)*	**0** *(0.0%)*	**255** *(86.4%)*	**257** *(87.1%)*
Inc	**1** *(0.3%)*	**3** *(1.0%)*	**31** *(10.5%)*	**30** *(10.2%)*

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
223DVA	Item 3 was identified as having been fired from the same firearm that fired the bullets from Item 1 based on sufficient agreement of the class and individual characteristics. Items 2, 4, and 5 were eliminated as having been fired from the same firearm that fired the bullets from Item 1 based on significant disagreement of the class characteristics. Items 4 and 5 were identified as having been fired from the same unknown firearm based on sufficient agreement of the class and individual characteristics. Item 2 was eliminated as having been fired from the same unknown firearm that fired Items 4 and 5 based on significant disagreement of the class characteristics.
22T6E9	Items 1.1 through 1.3 are three (3) test-fired 9mm caliber bullets with six land and groove impressions and right twist. Based on the agreement of class characteristics, these bullets were microscopically compared. Items 1.1 through 1.3 were identified as having been fired in the same firearm based on sufficient agreement of individual characteristics. Item 3 is one (1) fired 9mm caliber bullet with six land and groove impressions and right twist. Based on the agreement of class characteristics, this bullet was microscopically compared to test fired bullets from the Item 1 firearm. Item 3 was identified as having been fired in the Item 1 firearm based on the sufficient agreement of individual characteristics. Item 4 is one (1) fired 9mm caliber bullet with six land and groove impressions and right twist. Item 5 is one (1) fired 9mm bullet with six land and groove impressions and right twist. Based on the agreement of class characteristics, these bullets were microscopically compared. Items 4 and 5 were identified as having been fired in the same unknown firearm based on sufficient agreement of individual characteristics. Possible firearms that may have fired Item 4 include numerous 9mm caliber firearms by various manufacturers.
26ZWW9	I conducted a series of comparisons between the test fired bullets (Item 1) and exhibit fired bullets (Items 2 - 5). During this comparison I observed: - Strong disagreement in the widths of the land and groove marks on the exhibit fired bullet Item 2 and the test fired bullets. Correspondence in the number, width and direction of twist of the land and groove marks on the exhibit fired bullet Items 3, 4 & 5, and the test fired bullets. Significant differences in the striae detail within the land and groove marks on the exhibit fired bullets Items 4 & 5, and the test fired bullets. I addition, I observed subtle differences in the width of the land and groove marks between the exhibit and test fired bullets, when orientated in the 'best index' position. - Strong correspondence in the visible striae detail within the land and groove marks on the exhibit fired bullet Item 3 and test fired bullets. In addition, the visible striae detail was in agreement around the entire circumference of the bearing surfaces with the fired bullets in the indexed position. As a result of these observations, I formed the following opinions: 1) The exhibit fired bullet Item 3 had been discharged from the exhibit SIG Sauer P365 pistol. And, 2) The exhibit fired bullets (Item 2, 4 & 5) had not been discharged from the exhibit SIG Sauer P365 pistol.
28GPKA	The fired bullet, Item 3, was fired from the firearm, Item 1. The three fired bullets, Items 2, 4, and 5, were eliminated as having been fired from the firearm, Item 1. The two fired bullets, Items 4 and 5, were fired from the same unknown firearm.
2GGJ9U	Microscopic examination and comparison reveal that the bullets, Items 1.A and 1.C, were fired from the same firearm based on agreement of class and individual characteristics. Microscopic examination and comparison of the bullets, Items 1.D and 1.E, reveal that they were fired from the same firearm based on agreement of class and individual characteristics, and are consistent with being fired from Beretta, FN/Browning, Heckler and Koch, Ruger, Sar

TABLE 2

WebCode	Conclusions
	Arms/Sarsilmaz, Sig Sauer, Springfield Armory, Springfield Inc., and Taurus 9mm pistols. This list is provided only as an investigative lead and is not intended to be an all-inclusive list. Microscopic examination and comparison reveal that the bullets, Items 1.A and 1.C, were not fired from the same firearm as the bullets, Items 1.D and 1.E, based on disagreement of individual characteristics. Microscopic examination and comparison reveal that the bullets, Items 1.A and 1.C, were not fired from the same firearm as the bullet, Item 1.B based on disagreement of class characteristics. Microscopic examination and comparison reveal that the bullets, Items 1.D and 1.E, were not fired from the same firearm as the bullet, Item 1.B based on disagreement of class characteristics. Microscopic examination of the bullet, Item 1.B, reveals that it is consistent with being fired from Astra, Llama, Sig Arms, Sig Sauer, Smith and Wesson, and Star 9mm pistols. This list is provided only as an investigative lead and is not intended to be an all-inclusive list.
2GMU9K	Fired projectile, Item 3, was identified as having been fired in the same firearm as test fired projectiles within Item 1 based on agreement of class characteristics and sufficient agreement of individual characteristics within the land impressions and groove impressions. Fired projectile, Item 4 and Item 5, were identified as having been fired in the same firearm based on agreement of class characteristics and sufficient agreement of individual characteristics within the land impressions and groove impressions. Fired projectile, Item 2, was eliminated from having been fired in the same firearm as fired projectile Item 3, Item 4, Item 5, and test fired projectiles within Item 1, based on disagreement of class characteristics. Fired projectile, Item 3, and test fired projectiles within Item 1, were eliminated from having been fired in the same firearm as fired projectile, Item 4 and Item 5, based on agreement of class characteristics but significant disagreement of individual characteristics within the groove impressions and land impressions. Fired projectile Item 2 is consistent with 9mm Luger caliber. A list of possible firearms that could have fired Item 2 includes, but is not limited to, the following: Sig Arms, Hi-Point, Bryco Arms, Walther, Smith & Wesson, Beretta, IMI, Star, Glock, and Astra.
33DH9X	Item 3 was identified as having been fired from the same firearm as the Item 1 test fired bullets. Items 4 and 5 were identified as having been fired from the same firearm. Items 4 and 5 were eliminated as having been fired from the same firearm as Item 3 and Item 1 test fired bullets based on differences in individual characteristics. Item 2 was eliminated as having been fired from the same firearm as Items 3, 4, 5, and Item 1 test fired bullets based on differences in class characteristics. Firearms that produce similar rifling characteristics as those exhibited on Item 2 include, but are not limited to, 9mm Luger caliber firearms manufactured by Astra, Bryco Arms, Helwan, IMI, Jimenez Arms, Llama, Lorcin, Stallard Arms, Star, Walther, and Wilkinson Arms.
3GW3Q7	From the analysis, study, and based on the microscopic comparison of the bullets, it is concluded: That there are two groups of bullets: o Group 1. The 3 pieces of evidence identified with numbers 3, 4, and 5 correspond to 9 mm Luger caliber bullets, which are IDENTIFIED as having been fired from the same firearm. o Group 2. The piece of evidence identified with number 2 corresponds to a 9 mm Luger caliber bullet, which is IDENTIFIED as having been fired from a firearm. It is established that the firearm fired the bullets from group 1.
3GZHBW	Item 3 was discharged from the suspect firearm (item 1). Items 4 and 5 were discharged from the same firearm, which is not the suspect's one. Item 2 was fired in a third weapon. We can conclude that three firearms were used.
3MZ8HQ	Due to differences in class characteristics, submission 001-001 (#2) was excluded as having originated from the same source as 001-002 (#3) through 001-004 (#5) (source exclusion).

TABLE 2

WebCode	Conclusions
	Submissions 001-002 (#3) through 001-004 (#5) were microscopically compared. Based on similar class characteristics and sufficient agreement of individual characteristics, it was determined that submissions 001-003 (#4) and 001-004 (#5) originated from the same source (source identification). Due to differences in individual characteristics, it was determined that submission 001-002 (#3) was excluded as having originated from the same source as submissions 001-003 (#4) and 001-004 (#5) (source exclusion). Due to differences in class characteristics, submission 001-001 (#2) was excluded as having originated from the same source as 001-005 through 001-007 test fires (Sig Sauer P365 firearm #1) (source exclusion). Submissions 001-002 (#3) through 001-004 (#5) were microscopically compared to 001-005 through 001-007 (#1) test fires. Based on similar class characteristics and sufficient agreement of individual characteristics, it was determined that submission 001-002 (#3) originated from the same source as 001-005 through 001-007 test fires (Sig Sauer P365 firearm #1) (source identification). Due to differences in individual characteristics, it was determined that submissions 001-003 (#4) and 001-004 (#5) were excluded as having originated from the same source as submissions 001-005 through 001-007 test fires (Sig Sauer P365 firearm #1) (source exclusion).
3NJQVM	A microscopic examination and comparison of the evidence described above revealed the following: Deformed bullet (3) is IDENTIFIED as having been discharged from the SAME gun as known test fired bullets (1.1-1.3) based on the observed agreement of their class characteristics and sufficient agreement of their individual characteristics. Deformed bullets (4,5) 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. Deformed bullet (2) is ELIMINATED as having been discharged in the same gun as known test fired bullets (1.1-1.3), deformed bullet (3) and deformed bullets (4,5) based on the observed disagreement of class characteristics. Deformed bullets (4,5) are ELIMINATED as having been discharged from the same gun as deformed bullet (3) and known test fired bullets (1.1-1.3) based on the observed disagreement of individual characteristics.
3XGTP7	To identify the bullet fired from the same firearm as Item 1, the rifling marks left on the bullets were compared. As a result, the morphological characteristics of the rifling marks on Item 1 and Item 3 were identical, while the morphological characteristics and size of the rifling marks on Item 2 did not match. For Item 4 and Item 5, the sizes of the rifling marks were similar, but their morphological characteristics were not identical. Therefore, the bullet fired from the same firearm as Item 1 is determined to be Item 3.
47YEK9	[No Conclusions Reported.]
4CBZYR	Microscopic examination and comparison reveal that the bullets, Items 1.A and 1.C, were fired from the same firearm based on agreement of class and individual characteristics. Microscopic examination of the bullet, Item 1.B, reveals that it is consistent with being fired from Bryco Arms, Hi-Point, Lorcin, Sig Arms / Sauer, and Smith & Wesson 9mm pistols. This list is provided only as an investigative lead and is not intended to be an all-inclusive list. Microscopic examination and comparison of the bullets, Items 1.D and 1.E, reveal that they were fired from the same firearm based on agreement of class and individual characteristics, and are consistent with being fired from Beretta, FN / Browning, Canik, CZ, Diamondback, Hi-Point, Keltec, Palmetto State Armory, Remington, Ruger, SAR Arms, Sig Sauer, Springfield Armory / INC, and Taurus 9mm pistols. This list is provided only as an investigative lead and is not intended to be an all-inclusive list. Microscopic examination and comparison reveal that the bullets, Items 1.A and 1.C, were not fired from the same firearm as the bullet, Item 1.B based on disagreement of class characteristics. Microscopic examination and comparison reveal that the bullets, Items 1.A and 1.C, were not fired from the same firearm as the bullets, Item 1.D

TABLE 2

WebCode	Conclusions
	and 1.E based on disagreement of individual characteristics. Microscopic examination and comparison reveal that the bullets, Items 1.D and 1.E, were not fired from the same firearm as the bullet, Item 1.B based on disagreement of class characteristics.
4D7HZT	Items 1 - 5 are 9mm / 38 caliber class fired bullets. Items 1 and 3 were identified as having been fired in the same firearm based on agreement in class and individual characteristics. Item 2 was excluded as having been fired in the same firearm(s) as Items 1, 3, 4 and 5 based on differences in class characteristics. Items 4 and 5 were identified as having been fired in the same firearm based on agreement in class and individual characteristics. Items 4 and 5 could not be identified or excluded as having been fired in the same firearm as Items 1 and 3 based on insufficient agreement or disagreement in individual characteristics.
4GWHMG	Item 3 is identified as having been fired in the same firearm that fired item 1. Items 4 and 5 are identified as having been fired in the same unknown firearm. Items 4 and 5 are eliminated from having been fired in the same firearm that fired item 1 Item 2 is eliminated from having been fired in the same firearm(s) that fired items 1, 3, 4 and 5.
4JFGU8	The 9mm Luger calibre, Sig Sauer model P365, semi-automatic pistol that generated the Item 1 test fired bullets (see Attribution) [Attribution listed in Table 3: Additional Comments] was identified, within the limits of practical certainty, as having fired the Item 3 bullet, but was excluded as having fired the Item 2, 4 and 5 bullets. The Item 4 and 5 bullets were identified, within the limits of practical certainty, as having been fired by the same firearm/firearm barrel, but are excluded as having been fired by the firearm/firearm barrel that fired the Item 2 bullet. Three (3) firearms/firearm barrels are represented by the submitted bullets.
4JW2G	The fired bullet in Submission 2 was not fired in the firearm in Submission 1, based on disagreement observed in class characteristics. The fired bullet in Submission 3 was fired in the firearm in Submission 1, based on agreement observed in individual characteristics. The fired bullets in Submissions 4 and 5 were fired in the same firearm, based on agreement observed in individual characteristics. The fired bullets in Submissions 4 and 5 display class characteristics consistent with those produced by the firearm in Submission 1; however, due to a lack of similarities in individual characteristics, the fired bullets in Submissions 4 and 4 could not be included or excluded as having been fired in the firearm in Submission 1.
4JVZE4	FIRST: THE BULLETS LABELED "ITEM 2", "ITEM 3", "ITEM 4", AND "ITEM 5" CORRESPOND TO THE CALIBER DESIGNATED AS NINE BY NINETEEN MILLIMETERS (9 MM). SECOND: Upon conducting a micro-comparative study between the "problem" bullet labeled "ITEM 2" and the "test" bullets from the firearm labeled "ITEM 1," it was determined that it was not fired from the semi-automatic pistol, designated nine millimeters (9 mm), manufactured by SIG SAUER, model P365, with no visible serial number. THIRD: Upon conducting a micro-comparative study between the "problem" bullet labeled "ITEM 3" and the "test" bullets from the firearm labeled "ITEM 1," it was determined that it was fired from the semi-automatic pistol. SEMI-AUTOMATIC, CALIBER NINE MILLIMETERS (9 MM), MANUFACTURED BY SIG SAUER, MODEL P365, WITH NO VISIBLE SERIAL NUMBER. FOURTH: UPON PERFORMING THE MICRO-COMPARATIVE STUDY BETWEEN THE "PROBLEM" BULLETS LABELED "ITEM 4" AND "ITEM 5" WITH THE "WITNESS" BULLETS FROM THE FIREARM LABELED "ITEM 1," IT WAS DETERMINED THAT NEITHER WAS FIRED BY THE PISTOL, A SEMI-AUTOMATIC, CALIBER NINE MILLIMETERS (9 MM), MANUFACTURED BY SIG SAUER, MODEL P365, WITH NO VISIBLE SERIAL NUMBER.
4KT4DJ	Items 1 & 3: The Item 3 bullet was Identified to the Item 1-T3 test fired bullet. Item 2: The bullet was Eliminated to Items 1, 3, 4, & 5 based on a difference in class characteristics. The bullet has design features consistent with bullets loaded in 9mm Luger caliber ammunition. There are

TABLE 2

WebCode	Conclusions
	numerous manufacturers of firearms with similar rifling characteristics. Items 4 & 5: The bullets were Identified to each other. The bullets were Eliminated to Items 1 & 3. The bullets have design features consistent with bullets loaded in 9mm Luger caliber ammunition. There are numerous manufacturers of firearms with similar rifling characteristics.
4MC3LA	Laboratory Item #001.B (Item 2) fired questioned FMJ bullet is eliminated as being fired by the same firearm as the following items: Laboratory Item #001.A (Item 1) three fired FMJ bullets discharged from the suspect's firearm and, Laboratory Items 001.C (Item 3), 001.D (Item 4), and 001.E (Item 5), three fired questioned FMJ bullets. Laboratory Item #001.C (Item 3) fired questioned FMJ bullet is identified as being fired by the same firearm as Laboratory Item #001.A (Item 1) three fired FMJ bullets discharged from the suspect's firearm. Laboratory Item #001.D (Item 4) fired questioned FMJ bullet is identified as being fired by the same firearm as Laboratory Item #001.E (Item 5), fired questioned FMJ bullet. Laboratory Item #001.D (Item 4) and 001.E (Item 5) are inconclusive as being fired by the same firearm as Laboratory Item #001.A (Item 1) three fired FMJ bullets discharged from the suspect's firearm. An inconclusive finding resulted from agreement of all discernible class characteristics, without agreement or disagreement of individual characteristics due to absence, insufficiency, or lack of reproducibility.
4U47YK	Items 1 and 3 Item 3 was Identified to Item 1. Item 2 Item 2 was Eliminated to Items 1, 3, 4, and 5 based on a difference in class characteristics. Item 2 has design features consistent with bullets loaded in 9mm Luger caliber cartridges. There are numerous manufacturers of firearms with similar rifling characteristics. Items 4 and 5 Items 4 and 5 were Inconclusive (+) to each other. Items 4 and 5 were Eliminated to Items 1 and 3. Items 4 and 5 have design features consistent with bullets loaded in 9mm Luger caliber cartridges. There are numerous manufacturers of firearms with similar rifling characteristics.
4W6EXQ	Exhibit 3 (questioned recovered projectile) was identified as having been fired in the same 9mm firearm as exhibit 1 (test-fired projectiles). Exhibit 2 (questioned recovered projectile) was fired in a second 9mm firearm. Suspect weapons are unknown at this time; however, any suspect weapon should be submitted for examination. Exhibits 4 and 5 (questioned recovered projectiles) were 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.
4WAUEA	Compared the bullet marked #3 against the test bullets from the Item #1 Sig Sauer Pistol. The bullet marked #3 was IDENTIFIED as having been discharged from the #1 Sig Sauer Pistol. Compared the three (3) bullets marked #2, #4, and #5 against test bullets from the #1 Sig Sauer Pistol. The three (3) bullets Item marked #2, #4 and #5 were ELIMINATED as having been discharged from the #1 Sig Sauer Pistol. Compared the bullets marked #4 and #5 against each other. The bullets marked #4 and #5 were IDENTIFIED as having been discharged from the same firearm. (not the #1 Sig Sauer Pistol)
69JN8E	Once the comparative study was completed, it was concluded that item 3 is identical to item 1, indicating that they were fired from the same firearm. Items 2, 4, and 5 are not identical to item 1. Items 4 and 5 are identical, meaning they were fired from the same firearm.
6KP247	Examined the four specimens marked #2, #3, #4 and #5. They weigh 114.78, 114.40, 114.38 and 115.26 grains respectively and indicate six lands and six grooves with a right-hand twist. They are 38-caliber class discharged full metal jacketed bullets. The bullet marked #3 was microscopically compared to the three test standards marked #1a, #1b and #1c and identified as having been discharged from the same firearm. The two bullets marked #4 and #5 were microscopically compared and identified as having been discharged from the same firearm. The three bullets marked #2, #4 and #5 were microscopically compared to test

TABLE 2

WebCode	Conclusions
	standards marked #1a, #1b and #1c and eliminated as having been discharged from the same firearm. The two bullets marked #4 and #5 were microscopically compared to the bullet marked #2 and eliminated as having been discharged from the same firearm.
6LHUYN	1. The bullets marked E-1 to E-3 ("Item" 1) and E-4 ("Item" 3), corresponding to piece 1, are caliber 9mm, with rifling to the right (R-6) and were fired by the same firearm. (Identification) 2. The bullets marked E-5 ("Item" 4) and E-6 ("Item" 5), corresponding to piece 1, are caliber 9mm, with rifling to the right (R-6) and were fired by the same firearm. (Identification) 3. The bullet marked E-7 ("Item" 2, corresponding to piece 1, are caliber 9mm, with rifling to the right (R-6), was fired by a firearm and was not fired by the firearms used to fire the bullets marked E-1 to E-3 ("Item" 1), E-4 ("Item" 3), E-5 ("Item" 4) and E-6 ("Item" 5). (Elimination)
6V9F6M	Items 1-5 each consisted of fired bullet(s) in 9 x19mm calibre. Microscopic examination on the fired bullets in item 1-5 showed that Items 1 and Item 3 were fired from the same firearm that had fired Item 1.
6XCD8P	SUBMISSION 1-2: The bullet was eliminated from the submission 1-1, 1-3, 1-4, and 1-5 bullets. Manufacturers/brands of firearms that could have fired the projectile include, but are not limited to: Astra, Bryco Arms, Colt, Jimenez Arms, Llama, Sig Sauer, Smith & Wesson, Star, and Walther. SUBMISSION 1-3: The bullet was identified to the submission 1-1 bullets. SUBMISSION 1-4 and 1-5: These bullets were inconclusive to the submission 1-1 bullets based on some disagreement of individual characteristics, but insufficient for an elimination. In addition, these bullets were identified to each other (fired in the same unknown firearm). Manufacturers/brands of firearms that could have fired these bullets include, but are not limited to: Beretta, Canik, CZ, Diamondback, Keltec, Palmetto State Armory, Ruger, Sarsilmaz, Springfield Armory, Tanfoglio, Taurus, and Walther.
786LZ7	According to our results, the projectile Item 3 can be assigned to the three projectiles Item 1. The projectiles Item 2, Item 4 and Item 5 cannot be assigned to the three projectiles Item 1. The projectiles Item 4 and Item 5 can be assigned to each other.
7F6DWZ	The questioned recovered bullet (Items 3) was discharged from the same firearm as the known test-fired bullets (Item 1). The questioned recovered bullets (Item 2, Item 4 and Item 5) were not discharged from the same firearm as the known test-fired bullets (Item 1). The questioned recovered bullets (Item 4 and Item 5) were discharged from the same second firearm. The questioned recovered bullet (Item 2) was discharged from the third firearm.
7K2ZQP	Exhibit 3 (questioned recovered projectile) was identified as having been fired in the same 9mm firearm as exhibit 1 (test fired projectiles). Exhibits 4 and 5 (questioned recovered projectiles) 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 crime laboratory for analysis. Exhibit 2 (questioned recovered projectile) 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 crime laboratory for analysis.
7NNDY7	The bullet specimen marked #3 was compared microscopically against test bullets (#1) and was identified as having been discharged from the same firearm. The bullet specimens marked #4 and #5 were compared microscopically and were identified as having been discharged from the same firearm. The bullet specimens marked #2, #4, and #5 were compared microscopically against test bullets (#1) and were eliminated as having been discharged from the same firearm. The bullet specimen marked #2 was eliminated as having been discharged from the same firearms as bullet specimens #1, #3, #4, and #5.
7T3A68	Items 1 and 3 fired bullets were fired through the same firearm barrel (Firearms 1). Items 4 and

TABLE 2

WebCode	Conclusions
	5 fired bullets were fired through the same firearm barrel (Firearm 2). Item 2 fired bullet was not fired through the same barrel as Items 1 and 3 fired bullets or the same barrel as Items 4 and 5 fired bullets (Firearm 3).
7UUB9A	The bullet „Item 2" (calibre 9x19mm/9mm Luger), wasn't discharged from the same firearm as the known test-fired bullets „Item 1", presented at the examination in the box marked „Test No. 25-5262". The bullet „Item 3" (calibre 9x19mm/9mm Luger), was discharged from the same firearm as the known test-fired bullets „Item 1", presented at the examination in the box marked „Test No. 25-5262". The bullet „Item 4" (calibre 9x19mm/9mm Luger), wasn't discharged from the same firearm as the known test-fired bullets „Item 1", presented at the examination in the box marked „Test No. 25-5262". The bullet „Item 5" (calibre 9x19mm/9mm Luger), wasn't discharged from the same firearm as the known test-fired bullets „Item 1", presented at the examination in the box marked „Test No. 25-5262".
7VPUAB	Results of Examinations: Items 1 through 5 are .38 caliber/9mm Luger full metal jacketed (FMJ) bullets that were fired from a barrel(s) rifled with six grooves, right twist. The Item 3 bullet was identified as having been fired from the same barrel as the Item 1 bullets. The Item 4 and 5 bullets were identified as having been fired from the barrel of the same firearm. The Item 2 bullet was excluded as having been fired from the barrel that fired the Item 4 and 5 bullets. Items 2, 4, and 5 were excluded as having been fired from the same barrel from which the Item 1 bullets were fired, due to discernable difference in class characteristics.
7X8DMF	All fired evidence and test shots were physically examined then microscopically compared using light comparison microscopy. Item 3 (fired bullet) is identified as having been fired from the same firerm reported to have fired Items 1A, 1B and 1C (test fired bullets from reported 9mm Luger caliber, Sig Sauer P365 firearm). Items 4 and 5 (fired bullets) are identified as having been fired in the same firearm. Items 4 and 5 (fired bullets) are eliminated as having been fired from the same firearm reported to have fired Items 1A, 1B and 1C (test fired bullets from reported 9mm Luger caliber, Sig Sauer P365 firearm). There are differences in individual characteristics (These items share agreement of class characteristics but disagreement of the individual characteristics was observed in the land impressions). Item 2 (fired bullet) is eliminated as having been fired from the same firearm as Items 1A, 1B and 1C (test fired bullets from reported 9mm Luger caliber, Sig Sauer P365 firearm) as well as Items 3, 4 and 5 (fired bullets). There are differences in class characteristics (land and groove widths). Items 2, 4 and 5 (fired bullets) are consistent with being a .38 caliber class fired metal jacketed bullet displaying conventional rifling specifications of 6 lands and grooves with a right twist. Rifling specifications and physical characteristics are consistent with bullets fired from firearms produced by several manufacturers. No suspected firearm should be overlooked.
7XP27V	Examinations showed Item 3 was discharged from the Sig Sauer P365. Examinations showed Item 2, Item 4 and Item 5 were not discharged from the Sig Sauer P365.
82CYH7	The test fired bullet (Item #1) was microscopically compared to the discharged bullet (Item #2) and found to not have agreement in class characteristics (different LEA width). The discharged bullet (Item #2) was eliminated as having been discharged in the submitted firearm. The test fired bullet (Item #1) was microscopically compared to the discharged bullet (Item #3) and found to have sufficient agreement in class characteristics (general rifling characteristics) and individual characteristics (striated marks in multiple LEAs). The discharged bullet (Item #3) was identified as having been discharged in the submitted firearm. The test fired bullet (Item #1) was microscopically compared to the discharged bullets (Item #4 & Item #5) with inconclusive results. Similarities were noted in the striated marks in the LEAs, but insufficient for an identification. The two discharged bullets (Item #4 & Item #5) were microscopically compared

TABLE 2

WebCode	Conclusions
	and found to have sufficient agreement in class characteristics (general rifling characteristics) and individual characteristics (striated marks in multiple LEAs). The two discharged bullets (Item #4 & Item #5) were identified as having been discharged in the same firearm.
88XYWX	Item 3 (B2) was microscopically compared to firearm, Items 1 (P1) and an identification was made. Item 3 (B2) was fired from firearm, Items 1 (P1). Item 4 (B3) was microscopically compared to fired bullets, Item 5 (B4) and an identification was made. Item 4 (B3) and Item 5 (B4) were fired from the same firearm (not submitted). Item 2 (B1) was eliminated as having been fired from the same firearm as Items 1 (P1), Item 3 (B2), Item 4 (B3), and Item 5 (B4) due to differences in class characteristics (LAG dimensions).
8ACT7P	After physical and microscopic examination of the above evidence, it is my opinion that: A/ IDENTIFICATION Items 1-3 has agreement in discernible class characteristics as well as sufficient quality and quantity of individual markings as the test fires in Item 1-1. Item 1-3 was fired from the weapon that fired Item 1-1. B/ IDENTIFICATION Item 1-4 and 1-5 have agreement in discernible class characteristics as well as sufficient agreement of individual markings to conclude they were both fired from the same unknown weapon capable of discharging 38 caliber class ammunition with a general rifling configuration consisting of six (6) lands and grooves with a right twist. C/ EXCLUSION The spent projectiles in Item 1-4 and 1-5 have agreement in discernible class characteristics as the test fires in Item 1-1, however due to a significant disagreement of individual markings, Items 1-4 and 1-5 can be excluded from being fired from the weapon that fired Item 1-1. D/ EXCLUSION The spent projectile in Item 1-2 can be excluded from being fired from the weapon that fired Item 1-1 as well as the weapon that fired Items 1-4 and 1-5 based on a disagreement of class characteristics (land and grooves impression widths)
8CTLUR	1.- Las balas testigo marcados como uno 1, y la bala problema marcada como tres 3 fueron disparadas por el arma del sospechoso Sig Sauer P365. 2.- Las balas remitidas marcadas como indicio cuatro 4 y cinco 5 fueron disparadas por una misma arma de fuego desconocida. 3.- La bala remitida marcada como indicio dos 2, fue disparada por un arma de fuego desconocida. [Requested translation was not provided by time of publication.]
8F7NCG	A microscopic examination and comparison of the evidence described above revealed the following: Deformed bullet (3) is IDENTIFIED as having been discharged from the SAME gun as known test fired bullets (1.1-1.3) based on the observed agreement of their class characteristics and sufficient agreement of their individual characteristics. Deformed bullets (4,5) 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. Deformed bullet (2) is ELIMINATED as having been discharged from the same gun as known test fired bullets (1.1-1.3), deformed bullets (3) and (4,5) based on the observed disagreement of class characteristics. Deformed bullets (4,5) are ELIMINATED as having been discharged from the same gun as deformed bullet (3) and known test fired bullets (1.1-1.3) based on the observed disagreement of individual characteristics.
8GU4H7	I compared the three test fired bullets (Item 1) from the suspect firearm with each other and found sufficient reproducible individual marks for comparison. Bullet Item 2 has a significantly different class of rifling to the knowns and was not fired in the same firearm as Item 1. I found sufficient agreement of individual marks between Item 3 and the test fired bullets Item 1 for identification. Conclusion: Item 3 was fired in the suspect firearm Item 1. I found sufficient agreement of individual marks between Items 4 and 5 for identification. The areas of agreement between Items 4 and 5 were not present on Items 3 and 1. There was disagreement of individual marks between Items 4/5 and Items 3/1. Conclusion: Items 4 and 5 were fired in

TABLE 2

WebCode	Conclusions
	a single firearm which is a different firearm to the suspect firearm Item 1.
8PUGND	In my opinion: The bullet marked 'Item 2' was not fired from the same firearm that had fired the bullets marked 'Item 1'. The bullet marked 'Item 3' was fired from the same firearm that had fired the bullets marked 'Item 1'. Note: The possibility that the bullet was fired from another firearm producing marks with similar characteristics is exceedingly small. The bullets marked 'Item 4' and 'Item 5' were unlikely to have been fired from the firearm that had fired the bullets marked 'Item 1'.
8THTP6	Two propositions have been considered, as follows: H1: The bullet was fired from the suspect's firearm H2: The bullet was fired from some other firearm of the same calibre (9mm) and rifling (6R) Item 2 The rifling form impressions on item 2 are clearly different from those on item 1. On this basis, the bullet item 2 was not fired from the suspect's firearm. Item 3 During microscopic comparison, significant areas of correspondence were found between the firing marks on items 1 and 3, with no significant differences evident. These observations are as expected if item 3 was fired from the suspect's firearm. Such observations would be less probable if item 3 was fired from another firearm of the same calibre and rifling form, within the relevant population of firearms*. The observations provide moderately strong support for the proposition that the bullet was fired from the suspect's firearm rather than some other firearm of the same calibre (9mm) and rifling (6R). Item 4 During microscopic comparison, general agreement but no significant areas of detailed correspondence were found between the firing marks on items 1 and 4. These observations are as expected if item 4 was fired from another firearm of the same calibre and rifling form as the suspect's firearm (within the relevant population of firearms). Such observations would be less probable if item 4 was fired from the suspect's firearm. The observations provide moderately strong to strong support for the proposition that the bullet was fired from some other firearm of the same calibre (9mm) and rifling (6R), rather than from the suspect's firearm. Item 5 During microscopic comparison, general agreement but no significant areas of detailed correspondence were found between the firing marks on items 1 and 5. These observations are as expected if item 5 was fired from another firearm of the same calibre and rifling form as the suspect's firearm (within the relevant population of firearms). Such observations would be less probable if item 5 was fired from the suspect's firearm. The observations provide moderately strong to strong support for the proposition that the bullet was fired from some other firearm of the same calibre (9mm) and rifling (6R), rather than from the suspect's firearm. In expressing this level of support the following verbal scale has been used: 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). The interpretations and conclusions are based on the information currently available. It may be necessary to re-assess these if the information changes. *Relevant Population (In normal casework, the 'relevant population' of firearms would first be identified and recorded in the notes and report. This can significantly influence the evidential strength assigned to the comparison results. This population would typically consist of all firearms of the various types and calibres used in criminal shooting incidents. However, the relevant population of firearms under consideration for this test is very different from that encountered in normal casework. CTS tests typically involve one or more firearms of the same calibre and rifling form, and often of the same make and model, as the suspect's firearm. The evidential strength assigned and given in the report wording for each item reflects this.)

TABLE 2

WebCode	Conclusions
8UAR33	1.The bullets marked E-1 through E-3 (Item 1), the bullet marked E-5 (Item 3), corresponding to exhibit 1, are caliber 9 mm, with rifling to the right (R-6) and were fired by the same firearm (Identification). 2. The bullet marked E-6 (Item 4) and E-7 (Item 5), corresponding to exhibit 1, are caliber 9 mm, with rifling to the right (R-6) and were fired by the same firearm (Identification). 3. The bullet marked E-4 (Item 2), corresponding to exhibit 1, are caliber 9 mm, with rifling to the right (R-6) and was fired by a firearm; was no fired by the firearms used to fire the bullets marked E-1 through E-3 (Item 1), E-5 (Item 3), E-6 (Item 4) and E-7 (Item 5), corresponding to exhibit 1 (Elimination).
8ZFLVD	The microscopic examination allows me to confirm that Item 3 was fired by the Sig Sauer P365 received in this case. It also allows me to confirm that Item 2, Item 4 and Item 5 were fired by different firearms. The microscopic examination allows me to confirm that Item 4 and Item 5 were fired by the same firearm.
98NEHF	Items 1A1 through 1A3 and 1C (fired bullets) are identified as having been fired from the same firearm. Items 1D and 1E (fired bullets) are identified as having been fired from the same firearm. Items 1A1 through 1A3 and 1C (fired bullets) are inconclusive as having been fired from the same firearm as Items 1D and 1E (fired bullets). These items share agreement of class characteristics, but some disagreement of the individual characteristics observed in the land impressions. The differences observed are insufficient for an elimination. Item 1B (fired bullet) is eliminated as having been fired from the same firearm(s) as Items 1A1 through 1A3 and 1C through 1E (fired bullets). There are differences in class characteristics (land and groove widths).
9BRB99	The Item 3 bullet was identified as having been fired from the same barrel as the Item 1 bullets. The Item 4 and Item 5 bullets were identified as having been fired from the same barrel. Due to a difference in class characteristics, the Item 2 bullet was eliminated as having been fired from the same barrel as the Item 1, 3, 4, and 5 bullets. A pattern examination of the Item 4 and 5 bullets and Item 1 and Item 3 bullets was inconclusive due to insufficient quality and/or quantity of corresponding individual characteristics.
9EU9HF	A microscopic examination and comparison of the evidence described above revealed the following: Deformed Bullet (3) and Known Test Fired Bullets (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. Deformed Bullets (4,5) 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. Deformed Bullets (4,5) are ELIMINATED as having been discharged from the same gun as Known Test Fired Bullets (1.1, 1.2, 1.3) and Deformed Bullet (3) based on the observed disagreement of individual characteristics. Deformed Bullet (2) is ELIMINATED as having been discharged from the same gun as Known Test Fired Bullets (1.1, 1.2, 1.3) and Deformed Bullet (3) based on the observed disagreement of class characteristics. Deformed Bullet (2) is ELIMINATED as having been discharged from the same gun as Deformed Bullets (4,5) based on the observed disagreement of class characteristics.
9FQQJH	Evidence Received Item#1A, 1B & 1C 03-9MM/38 Class Cal. deformed CJ bullets 25-387H1A, H1B & H1C (Test specimens from a 9MM Lug Cal Sig Sauer P365 pistol) Item#2 01-9MM/38 Class Cal. deformed CJ Bullet 6/R 25-387H2 Item#3 01-9MM/38 Class Cal. deformed CJ Bullet 6/R 25-387H3 Item#4 01-9MM/38 Class Cal. deformed CJ Bullet 6/R 25-387H4 Item#5 01-9MM/38 Class Cal. deformed CJ Bullet 6/R 25-387H5 Microscopic Examination The above listed evidence was examined and compared to each other with the following results. Source Identification Items #1A, 1B, 1C and item # 3 were microscopically

TABLE 2

WebCode	Conclusions
	examined and compared. Based on the observed agreement of their class characteristics and sufficient agreement of individual characteristics, items # 1A, 1B, 1C and item # 3 are all identified as having been fired by one gun, the 9MM Lug Cal Sig Sauer P365 pistol. Source Identification Items # 4 & 5 were microscopically examined and compared. Based on the observed agreement of their class characteristics and sufficient agreement of individual characteristics, items # 4 & 5 are all identified as having been fired by one gun. Source Exclusion Items #1A, 1B, 1C, 2, 3, 4, & 5 were microscopically examined and compared. Based on the disagreement of class and or individual characteristics, item # 2 is eliminated as having been fired by the same firearm as items # 1A, 1B, 1C, 3, 4, & 5. Source Exclusion Items # 3, 4 & 5 were microscopically examined and compared. Based on the disagreement of class and or individual characteristics, item # 3 is eliminated as having been fired by the same firearm as items # 4 & 5. 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 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.' [Participant submitted data in a format that could not be reproduced in this report.]
9HCBPL	Item 2: Not similar to Item 1 Item 3: Similar to Item 1 Item 4: Inconclusive Item 5: Not similar to item 1
9HRU9J	The bullets/fragments, Lab Items 1 and 3, were identified as having been fired by the same firearm based on agreement of class characteristics and corresponding individual detail using microscopic comparison. The bullets/fragments, Lab Items 4 and 5, were identified as having been fired by the same firearm based on agreement of class characteristics and corresponding individual detail using microscopic comparison. The bullets/fragments, Lab Items 1 and 3, were eliminated from having been fired by the same firearm as Lab Items 4 and 5 based on disagreement of individual characteristics using microscopic comparison. The bullet/fragment,

TABLE 2

WebCode	Conclusions
	Lab Item 2, was eliminated from having been fired by the same firearm as Lab Items 1 and 3, and by the same firearm as Lab Items 4 and 5, based on disagreement of class characteristics using microscopic comparison.
9JLDEQ	Item 3 have been fired in the seized Sig Sauer P365 seized from the suspect. Item 4 and Item 5 have been fired in a same weapon, different from the one that fired Item 3 - Item 2 have been fired in a third weapon, different from the one that fired Item 3 and also different from the one that fired Item 4 and Item 5. In conclusion 3 different weapons were used on the crime scene: The seized Sig Sauer P365 who fired Item 3 - A second weapon who fired Item 4 and Item 5 - A third weapon who fired Item 2
9PL2LJ	Three different firearms produced the four submitted bullets. One of the submitted bullets, Item 001-03, was fired in the Sig Sauer pistol that produced the test fired bullets, Item 001-01. A second bullet, Item 001-02, was fired in an unknown firearm. The remaining two bullets, Item 001-04 and Item 001-05, were both fired in a second unknown firearm.
9TWKDF	The three bullets Item 1 have the same system traces and show individual traces that repeat stably among each other. The system traces and the individual traces on the item 3 bullet match the traces of the item 1 bullet. It is certain that the Item 3 bullet was fired from the same weapon as the Item 1 bullet. The Item 2 bullet has other system traces than the Item 1 bullet. It is certain that the Item 2 bullet was fired from a different weapon than the Item 1 bullets. The bullets Item 4 and Item 5 were also fired from a different weapon than the bullets Item 1. The marks on bullets Item 4 and Item 5 show matching individual marks, so it is clear that these two bullets were fired from the same weapon.
9VFWRB	The Item 3 was fired by the firearm seized (Item 1). The Items 2, 4 and 5 were not fired by the firearm seized (Item 1). Items 4 and 5 were fired by the same firearm, but different from Item 2.
9Y49T3	The Sig Sauer P365 handgun (submited as Item 1) fire bullet submitted as Item 3. The Sig Sauer P365 handgun (submited as Item 1) did not fire bullet submitted as Item 2, 4 and 5. The bullet identified as Item 4 and the bullet identified as Item 5, were fired from the same firearm
9ZBLA4	[No Conclusions Reported.]
ABHXUX	The bullet with the number ITEM 2 recovered and questioned corresponds to a 9 mm LUGER caliber. It is concluded that there is NO correspondence with ITEM 1, consisting of three bullets fired from the confiscated Sig Sauer P365 firearm. The bullet with the number ITEM 3 recovered and questioned corresponds to the 9 mm LUGER caliber. It is concluded that there is a match with ITEM 1, consisting of three bullets fired from the confiscated Sig Sauer P365 firearm. The bullet with the number ITEM 4 recovered and questioned corresponds to the 9 mm LUGER caliber. It is concluded that there is NO correspondence with ITEM 1, consisting of three bullets fired from the confiscated Sig Sauer P365 firearm. The bullet with the number ITEM 5 recovered and questioned corresponds to the 9 mm LUGER caliber. It is concluded that there is NO correspondence with ITEM 1, consisting of three bullets fired from the confiscated Sig Sauer P365 firearm.
ADNK83	Item 3 was microscopically identified as having been fired in the same firearm as the Item 1 tests from the Sig Sauer pistol. Item 3 was determined to be of 9mm caliber displaying rifling characteristics of 6 lands and grooves, right twist. Item 2 was not fired from the same firearm as Item 1 tests, nor was it fired from the same unknown firearm as Items 4 and 5. Item 2 was determined to be of 9mm caliber, displaying rifling characteristics of 6 lands and grooves, right twist. Manufacturers of firearms with similar rifling characteristics are numerous and can be provided upon request. Items 4 and 5 were microscopically identified as having been fired in the same unknown firearm; they were not fired from the same firearm as Item 1 tests, nor were

TABLE 2

WebCode	Conclusions
	they fired from the same unknown firearm as Item 2. The items were determined to be of 9mm caliber, displaying rifling characteristics of 6 lands and grooves, right twist. Manufacturers of firearms with similar rifling characteristics are numerous and can be provided upon request.
AGFCPD	Item 3 was Identified to one of the Item 1 test fired bullets. Item 2 was Eliminated to Items 1, 3, 4, and 5. Items 4 and 5 were Identified to each other. Items 4 and 5 were Inconclusive (-) to Items 1 and 3.
APT782	The confiscated firearm Sig Sauer P365, which fired the test-fired bullets received and internally identified as P1A-25-6112, P1B-25-6112, and P1C-6112: DID fire the bullet analyzed in Report [Laboratory] 2025-06112-FIS, internally identified in the Ballistics Unit as E3-25-6112 (Item 3). DID NOT fire the bullets analyzed in Report [Laboratory] 2025-06112-FIS, internally identified in the Ballistics Unit as E2-25-6112 (Item 2), E4-25-6112 (Item 4), and E5-25-6112 (Item 5).
AXZ3PD	Item 3 and test fired bullet, Item 1a, are an Identification. Items 4 & 5 are an Identification. Items 4 & 5 are an elimination to Items 3 and test fired bullet, Items 1a-b. Item 2 is an Elimination to Items 3-5 and test fired bullets due to different class characteristics.
B8ELDN	The Exhibit 1 and 3 bullets were identified as having been fired from the same firearm. The Exhibit 4 and 5 bullets were identified as having been fired from the same firearm. The Exhibit 1 and 3 bullets were excluded as having been fired from the same firearm as the Exhibit 4 and 5 bullets. The Exhibit 2 bullet was excluded as having been fired from the same firearms as Exhibits 1, 3, 4, and 5. Firearms that produce general rifling characteristics similar to those observed on Exhibit 2 include numerous makes and models. Firearms that produce general rifling characteristics similar to those observed on Exhibits 4 and 5 include numerous makes and models.
BB2Z3Y	In my opinion, The exhibit fired bullet, Item 2, was not discharged from the exhibit 9mm Luger calibre Sig Sauer model P365 self-loading pistol, Item 1. (Second firearm) The exhibit fired bullet, Item 3, was discharged from the exhibit pistol, Item 1. The exhibit fired bullets, Item 4 and Item 5, were both discharged in the same firearm, but a different firearm to the exhibit pistol, Item 1. (Third firearm)
BCT272	The fired bullets listed as Items 2, 3, 4 & 5 (questioned) were microscopically compared to each other and to the test fired bullets in Item1 (known). The following determinations were made: Item 3 was fired from the same firearm as Item 1. Items 4 & 5 were both fired in the same, unknown firearm capable of chambering and firing .38 caliber class (.38/.357/9mm) ammunition. Item 2 was fired in a separate, unknown firearm capable of chambering and firing .38 caliber class (.38/.357/9mm) ammunition. The association(s) made in this examination is (are) based on the observation of agreement of all discernable class characteristics and sufficient agreement of individual tool mark characteristics. Items 1 through 5 will be retained in the Crime Lab for future reference.
BFXKE9	001 A was identified as having been fired from the same firearm as 001 C. 001 A was eliminated as having been fired from the same firearm as 001 B. 001 A and 001 C were unable to be identified or eliminated as having been fired from the same firearm as 001 D or 001 E. 001 D was unable to be identified or eliminated as having been fired from the same firearm as 001 E. 001 B was eliminated as having been fired from the same firearm as 001 D or 001 E.
BQHXR7	One of the submitted bullets (Item 2) was not fired in the same firearm as the remaining bullets (items 1, 3, 4 or 5). One of the submitted bullets (Item 3) was fired in the same firearms as the test-fired bullets (Item 1). The remaining two bullets (items 4 and 5) were fired in the same

TABLE 2

WebCode	Conclusions
	firearm as each other but were not fired in the same firearm as items 1 and 3.
BRMLPA	Item 3 was fired in the same firearm as the item 1 test fires. Items 4 and 5 were fired in a second firearm. Items 4 and 5 are consistent with bullets from ammunition designated 9mm Luger. A list of makes of firearms that may have fired this item is not provided due to its extensive length. Item 2 was fired in a third firearm. Item 2 is consistent with a bullet from ammunition designated 9mm Luger. A list of makes of firearms that may have fired this item is not provided due to its extensive length.
BTYF6B	Using the Bayesian approach in casework we view our findings under two hypotheses. In this test we used the following hypotheses: H1: The questioned bullet is fired by the submitted firearm. H2: The questioned bullet is fired by another firearm of the same caliber and with the same class characteristics as the submitted firearm. The likelihood ratio (LR) of the findings is expressed in the following verbal scale: Approximately equally probable (LR = 1-2) - Slightly more probable (LR = 2-10) - More probable (LR = 10-100) - Much more probable (LR = 100-10,000) - Very much more probable (LR = 10,000-1,000,000) - Extremely more probable (LR = >1,000,000) Conclusions: Item 1 and 3: The findings are extremely more probable when H1 is true than when H2 is true. tem 1 and Item 4 and 5: The findings are much more probable when H2 is true than when H1 is true. Item 2: Due to other class characteristics this bullet is fired by another firearm then the submitted firearm.
C3FMEJ	Microscopic examination and comparison reveal that the bullets, Items 1.A and 1.C, were fired from the same firearm based on agreement of class and individual characteristics. Microscopic examination and comparison of the bullets, Items 1.D and 1.E, reveal that they were fired from the same firearm based on agreement of class and individual characteristics, and are consistent with being fired from Beretta, CZ, Canik, Ruger, Sig Sauer, Springfield and Taurus 9mm pistols. This list is provided only as an investigative lead and is not intended to be an all-inclusive list. Microscopic examination and comparison reveal that the bullets, Items 1.A and 1.C, were not fired from the same firearm as the bullets, Items 1.D and 1.E, based on disagreement of individual characteristics. Microscopic examination and comparison reveal that the bullets, Items 1.A, 1.C, 1.D and 1.E , were not fired from the same firearm as the bullet, Item 1.B, based on disagreement of class characteristics. Microscopic examination of the bullet, Item 1.B, reveals that it is consistent with being fired from a Sig Sauer 9mm pistol. This list is provided only as an investigative lead and is not intended to be an all-inclusive list.
C76U87	The projectile from item number three was fired by the firearm that fired the projectiles from item number one.
CFFWR8	The incriminated bullet from item 3 was fired by firearm A1, a SIG SAUER P365 9 mm LUGER caliber pistol. In other words, there is IDENTIFICATION. The bullets from items 4 and 5 were fired by the same firearm, meaning there is IDENTIFICATION between the incriminated bullets. The bullet from item 2 was not fired by firearm A1 (the pistol) nor by the firearm that fired the bullets from items 4 and 5. This is due to differences in class characteristics (land and groove widths); therefore, there is no IDENTIFICATION.
CHY99N	Item 3 was identified microscopically as having been fired from the same firearm that reportedly fired the Item 1 test fires based on agreement of the combination of individual characteristics and all discernible class characteristics. Items 4 and 5 were microscopically eliminated as having been fired from the same firearm that reportedly fired the Item 1 test fires due to disagreement of individual characteristics. Items 4 and 5 were identified microscopically as having been fired from the same unknown firearm based on agreement of the combination of individual characteristics and all discernible class characteristics. Visual and microscopic examination of Items 4 and 5 revealed them to be 38 / 9mm caliber-class bullets fired from a

TABLE 2

WebCode	Conclusions
	firearm with a rifling pattern of six (6) lands and grooves with a right twist. The size, weight and configuration of Items 4 and 5 are most consistent with bullets typically found loaded in 9mm Luger cartridges. Among the more common firearms that could have possibly fired Items 4 and 5 include, but are not limited to, the following: Beretta, Canik 55, Colt, Heckler & Koch, Kahr Arms, Keltec, Ruger, Springfield Armory, Taurus and Walther brands of 9mm Luger semi-automatic pistols. Item 2 was microscopically eliminated as having been fired from the same firearm that reportedly fired the Item 1 test fires and from the same unknown firearm that fired Items 4 and 5 due to differences in land and groove impression widths. Visual and microscopic examination of Item 2 revealed it to be a 38 / 9mm caliber-class bullet fired from a firearm with a rifling pattern of six (6) lands and grooves with a right twist. The size, weight and configuration of Item 2 are most consistent with bullets typically found loaded in 9mm Luger cartridges. Among the more common firearms that could have possibly fired Item 2 include, but are not limited to, the following: Astra, Bryco Arms, Intratec, Jennings/Bryco, Jimenez Arms, Llama, Lorcin and Skyy Industries brands of 9mm Luger sem-automatic pistols. The lists of possible firearms were generated using an in-house expanded version of the General Rifling Characteristics (GRC) Database created by the Federal Bureau of Investigation. These are not meant to be all-inclusive lists but rather investigative aides; and any suspect firearm(s) of the appropriate caliber-class should be submitted for comparison; however, complete lists of the search results will be maintained in the case file. Current Integrated Ballistics Identification System (IBIS) / BrassTRAX technology in this laboratory is not capable of bullet imaging; therefore, no entry was made. All evidence items are being returned.
CK7BET	Bullet B2 (Item #3) was microscopically compared to firearm, Pistol P1 (Item #1) and an identification was made. Bullet B2 (Item #3) was fired from firearm, Pistol P1 (Item #1). Bullet B3 (Item #4) was microscopically compared to fired bullet, Bullet B4 (Item #5) and an identification was made. Bullet B3 (Item #4) and Bullet B4 (Item #5) were fired from the same firearm, not submitted. Bullet B1 (Item #2) was eliminated as having been fired from firearm, Pistol P1 (Item #1), and eliminated from Bullet B2 (Item #1), B3 (Item #4) and B4 (Item #5) due to differences in class characteristics. Bullet B1 was eliminated. Width of lands and grooves are different.
CNK6PL	On November 03, 2025, PT Vendor of the [Laboratory] Quality Assurance Section delivered the following to this section for examination: 1-1 Three (3) metal jacketed lead spent projectiles (test fires A, B, C from Sig Sauer P365). 1-2 One (1) metal jacketed lead spent projectile. 1-3 One (1) metal jacketed lead spent projectile. 1-4 One (1) metal jacketed lead spent projectile. 1-5 One (1) metal jacketed lead spent projectile. After physical and microscopic examination of the submitted evidence listed above, it is my opinion that; A/ The one (1) spent projectile mentioned above in Item 1-3 was fired from the Sig Sauer P365 pistol. “IDENTIFICATION”. B/ The two (2) spent projectiles mentioned above in Items 1-4 and 1-5 were fired by the same unknown weapon capable of firing .38 caliber class ammunition (to include 9mm) and possessing a cut rifling system consisting of six (6) lands and grooves with a right twist. Due to a disagreement of individual microscopic markings, Items 1-4 and 1-5 could not have been fired from the Sig Sauer P365 pistol. “IDENTIFICATION AND EXCLUSION”. C/ The one (1) spent projectile mentioned above in Item 1-2 was fired by an unknown weapon capable of firing .38 caliber class ammunition (to include 9mm) and possessing a cut rifling system consisting of six (6) lands and grooves with a right twist. Due to a disagreement of class characteristics (land and groove width measurements), Item 1-2 could not have been fired by the Sig Sauer P365 pistol nor the unknown weapon that fired Items 1-4 and 1-5. “EXCLUSION”. [Participant submitted data in a format that could not be reproduced in this report.]

TABLE 2

WebCode	Conclusions
CPK2KN	The three (03) reference bullets marked as Items #01, obtained by firing the SIG SAUER pistol, model P365, 9mm caliber, seized from a suspect, match in their individual characteristics the evidence bullet marked as Item #03 (POSITIVE CONCLUSION). The three (03) reference bullets marked as Items #01, obtained by firing the SIG SAUER pistol, model P365, 9mm caliber, seized from a suspect, do not match the individual characteristics of the bullets marked as Items #02, #04, and #05 (NEGATIVE CONCLUSION).
CTGPYA	Item: 1-1-1 (CTS 1) Caliber: 9mm Type: Three test fired bullets Suitability: Suitable Item: 1-2-1 (CTS 2) Caliber: 38 consistent with 9mm Type: One fired bullet Suitability: Suitable List of Possible Firearms: Provided as Appendix 1. Item: 1-3-1 (CTS 3) Caliber: 9mm Type: One fired bullet Suitability: Suitable Item: 1-4-1 (CTS 4) Caliber: 38 consistent with 9mm Type: One fired bullet Suitability: Suitable List of Possible Firearms: Provided as Appendix 2. Item: 1-5-1 (CTS 5) Caliber: 38 consistent with 9mm Type: One fired bullet Suitability: Suitable List of Possible Firearms: Provided as Appendix 2. Based on microscopic comparisons, in the opinion of the laboratory: Item 1-3-1 (CTS 3) bullet was identified as having been fired by the same firearm that fired item 1-1-1 (CTS 1) test fired bullets. Items 1-4-1 (CTS 4) and 1-5-1 (CTS 5) bullets were eliminated as having been fired by the same firearm that fired item 1-1-1 (CTS 1) test fired bullets. Items 1-4-1 (CTS 4) and 1-5-1 (CTS 5) bullets were identified as having been fired by the same unknown firearm. Based on differences in class characteristics, item 1-2-1 (CTS 2) was eliminated as having been fired by the same firearm that fired item 1-1-1 (CTS 1) test fired bullets.
CVJPRG	Submission 001-004 was excluded as originating from the same source that fired submissions 001-005, 001-006 and 001-007 based on class characteristics (source exclusion- size of land impressions) Submission 001-006 was microscopically compared to submission 001-007. Based on similar class characteristics and sufficient agreement of individual characteristics, submissions 001-006 and 001-007 are determined to have originated from the same source (source identification). Submission 001-005 was microscopically compared to submission 001-006. Due to a difference in individual characteristics, submission 001-005 is determined to have been excluded from originating from the same source as submissions 001-006 and 001-007 (source exclusion.) Submission 001-004 was excluded as originating from the same source as test fires 001-001, 001-002 and 001-003 based on class characteristics (source exclusion- size of land impressions). Submission 001-005 was microscopically compared to test fire 001-002 submission (Sig Sauer model P365). Based on similar class characteristics and sufficient agreement of individual characteristics, submission 001-005 is determined to have originated from the same source as 001-001, 001-002 and 001-003 test fires (source identification). Submission 001-006 was microscopically compared to test fire 001-002 submission (Sig Sauer model P365). Due to a difference in individual characteristics, submissions 001-006 and 001-007 are determined to have been excluded from originating from the same source as test fires 001-001, 001-002 and 001-003 (source exclusion).
CXBPD6	The projectiles described as items-2, 3, 4, 5, are 9mm caliber, fired by firearms of the same caliber, generally pistol type, submachine gun. The projectile described as item-3 was fired by the firearm that fired the pattern projectiles described as item-1. The projectile described as item-2 was fired by another firearm, different from the one that fired items-3, 4 and 5. The projectiles described as item-4 and 5 were fired by the same firearm different from the one that fired the projectiles described as item-2 and item-3, thus determining that three (3) firearms fired the projectiles described above.
D3ZJQW	Item 3 had been fired out of the same barell than the known samples. Items 2, 4 and 5 had been fired out of another barell than the known samples.

TABLE 2

WebCode	Conclusions
DAHU2C	A microscopic examination and comparison of the evidence described above reviewed the following: Deformed bullet (3) is identified as having been fired from the same gun as known test fired bullets (1.1, 1.2, 1.3) based on the observed agreement of their class and sufficient agreement of their individual characteristics. Deformed bullets (4, 5) is identified as having been fired from the same gun based on the observed agreement of their class and sufficient agreement of their individual characteristics. Deformed bullets (4, 5) are eliminated as having been fired from the same gun as deformed bullet (3) and known test fired bullets (1.1, 1.2, 1.3) based on the observed disagreement of individual characteristics. Deformed bullet (2) are eliminated as having been fired from the same gun as deformed bullet (3) and known test fired bullets (1.1, 1.2, 1.3) based on the observed disagreement of individual characteristics. Deformed bullet (2) are eliminated as having been fired from the same gun as deformed bullets (4, 5) based on the observed disagreement of individual characteristics.
DCAV6F	Items(#2~#5) were microscopically examined to each other. Based on the comparentative examination, individual characteristics were observed and it was determined that; Item #3 was discharged from the same firearms as the known cased(item 1), and the others(#2, #4, #5), were not same.
DDMK77	Comparisons performed between the test fired bullets (Item 01) and Items 02, 04 and 05 resulted in an exclusion. Comparisons performed between the test fired bullets (Item 01) and Item 03 resulted in an identification. Comparisons performed between Item 04 and Item 05 resulted in an identification. Comparisons performed between Item 04 and Item 02 resulted in an exclusion.
DEQG8N	Examinations showed Item 3 was discharged from the the same firearm as Item 1. Examinations showed Items 2, 4, and 5 were not discharged from the same firearm as Item 1.
DJJGN6	The submitted fired bullet (Item 2) was eliminated as having been fired from the seized Sig Sauer pistol. The submitted fired bullet (Item 3) was identified as having been fired from the seized Sig Sauer pistol. The submitted fired bullets (Items 4 & 5) were eliminated as having been fired from the seized Sig Sauer pistol. The submitted fired bullets (Items 4 & 5) were identified as having been fired from a single unknown firearm.
DLFVF2	Item 3 was fired from pistol Sig Sauer P365 of Item 1 (Item 1 – one (1) bullet cal. 9x19m matching with Item 1 - three (3) bullets test fired by pistol Sig Sauer P365 cal. 9x19mm).
DLWPJW	1. The bullets marked E-1 through E-3 (Item 1) and the bullet marked E-4 (Item 3), corresponding to exhibit 1, are 9mm caliber, with right-hand rifling (R-6), and were fired by the same firearm (Identification). 2. The bullet marked E-5 (Item 4) and the bullet marked E-6 (Item 5) corresponding to exhibit 1, are 9mm caliber, with right-hand rifling (R-6), and were fired by the same firearm (Identification). 3. The bullet marked E-7 (Item 2), corresponding to exhibit 1, is 9mm caliber, with right-hand rifling (R-6), and was fired from a firearm; however, it was not fired from the firearms used to fire the bullets marked E-1 through E-3 (Item 1), the bullet marked E-4 (Item 3), the bullet marked E-5 (Item 4), and the bullet marked E-6 (Item 5), corresponding to exhibit 1 (Elimination).
DNXWFG	Exhibit 3 (questioned recovered projectile) was identified as having been fired in the same 9mm firearm as exhibit 1 (test fired projectiles). Exhibits 4 and 5 (questioned recovered projectiles) 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 2 (questioned recovered projectile) 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.

TABLE 2

WebCode	Conclusions
DQ4G2W	Item 1 compared to each other, sufficient correspondence of individual characteristics were identified to form the conclusion that the fired bullets had been fired in one firearm. Correspondence of individual characteristics were identified across all six LEA's. Item 2 was compared to Item 1, and found to have different class characteristics (LEA's and GEA's widths) when compared to Item 1. Item 3 was compared to Item 1, sufficient correspondence of class and individual characteristics were identified to form the conclusion that the fired bullets (Item 1) had been fired from the same firearm which fired the bullets (Item 1). Correspondence of individual characteristics were identified across all six LEA's. Item 4 was compared to Item 1, sufficient correspondence of class characteristics identified between Item 4 and Item 1. Individual characteristics identified on Item 4 were different to those observed on the fired bullets (Item 1). Based on this it was identified that Item 4 had been fired from a different firearm to that which fired the bullets (Item 1). Item 5 was compared to Item 1, sufficient correspondence of class characteristics identified between Item 5 and Item 1. Individual characteristics identified on Item 5 were different to those observed on the fired bullets (Item 1). Based on this it was identified that Item 5 had been fired from a different firearm to that which fired the bullets (Item 1). Item 4 was compared to Item 5, sufficient correspondence of class and individual characteristics were identified to form the conclusion that the fired bullets (Item 4 and Item 5) had been fired from the same firearm other than that which fired the bullets (Item 1). Correspondence of individual characteristics were identified across all six LEA's. Item 2 negative to Item 1 (second firearm) Item 3 positive to Item 1 Item 4 and Item 5 negative to Item 1 Item 4 positive to Item 5 (third firearm)
DQ6CP9	Items 1 through 5 (fired bullets) were microscopically examined and compared to each other. Items 1 and 3 (fired bullets) were fired through the same firearm barrel, firearm not submitted. (Firearm 1) Items 4 and 5 (fired bullets) were fired through the same firearm barrel, firearm not submitted. (Firearm 2) Item 2 (fired bullet) was not fired through the same barrel as Items 1 and 3 or the same barrel as Items 4 and 5 (fired bullets), 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.
DWB6J4	The one (1) fired bullet, item 1.3, was identified as having been fired in the Sig Sauer pistol, item 1.1, based on the agreement of all discernable class characteristics and agreement of corresponding individual microscopic markings. The two (2) fired bullets, items 1.4 and 1.5, were consistent in all observable class characteristics (caliber, number of lands and grooves, rifling, and twist) as the Sig Sauer pistol, item 1.1. While there is some disagreement of microscopic markings, the markings present are insufficient for an elimination. The results are inconclusive. The fired bullet, item 1.2, was eliminated as having been fired in the Sig Sauer pistol, item 1.1, based on a difference in class characteristics (widths of lands and grooves). The two (2) fired bullets, items 1.4 and 1.5, were identified as having been fired in the same unknown firearm, based on the agreement of all discernable class characteristics and agreement of corresponding individual microscopic markings. The fired bullet, item 1.2, was eliminated as having been fired in the same firearm as the fired bullets, items 1.4 and 1.5, based on a difference in class characteristics (widths of lands and grooves).
E7VY87	Items 1 and 3 were fired in the same firearm. Items 4 and 5 were fired in a second firearm. Items 4 and 5 are consistent with bullets from ammunition designated 9mm Luger. A list of makes of firearms that may have fired these items is not provided due to its extensive length.

TABLE 2

WebCode	Conclusions
	Item 2 was fired in a third firearm. Item 2 is consistent with a bullet from ammunition designated 9mm Luger. A list of makes of firearms that may have fired this item is not provided due to its extensive length.
EG2GB9	Test-fires from item 1 match item 3 and were therefore discharged in the same firearm (Sig Sauer P365). Item 1 does not match item 2. Item 1 does not match item 4 or 5. However items 4 and 5 match one another were discharged from the same firearm. Therefore three different firearms used.
EHUBBX	1. The submitted fired bullet Item#3 was microscopically examined and compared to test fires from Item#1; they were positively identified as having been fired in the submitted pistol. 2. The submitted fired bullets Item#4 and Item#5 were microscopically examined and compared to each other; they were positively identified as having been fired in the same firearm. 3. The submitted fired bullet Item#2 was microscopically examined and compared to Item#3; they were eliminated as having been fired in the same firearm. 4. The submitted fired bullet Item#2 was microscopically examined and compared to Item#4; they were eliminated as having been fired in the same firearm. 5. The submitted fired bullet Item#3 was microscopically examined and compared to Item#4; they were eliminated as having been fired in the same firearm.
EQ4ZNW	Item #3 was identified as having been fired from Item #1 (pistol) based upon sufficient agreement of individual characteristics. Items #4 and #5 were identified as having been fired from same unknown firearm based upon sufficient agreement of individual characteristics. Unknown Firearm "A". Items #4 and #5 were eliminated as having been fired from Item #1 (pistol) based upon differences of individual characteristics. Item #2 has marks of value for future microscopic comparisons. Unknown Firearm "B". Item #2 was eliminated as having been fired from Item #1 (pistol) and Items #4 and #5 (unknown firearm "A") based upon differences in class characteristics.
EUZK99	Test fired bullets from Item 1 were microscopically examined and compared with a fired bullet, Item 3. Based on the observed agreement of their class characteristics, and sufficient agreement of their individual characteristics, Item 3 is identified as having been fired from the same firearm as Item 1. A test fired bullet from Item 1 was microscopically examined and compared with a fired bullet, Item 2. Based on the observed disagreement of their class characteristics, Item 2 is eliminated as having been fired from the same firearm as Items 1 and 3. The fired bullets, Items 4 and 5, were microscopically examined and compared with test fired bullets from Item 1, and the fired bullet, Item 3. There is observed agreement of their class characteristics. However, based on the observed disagreement of individual characteristics, Items 4 and 5 were not identified as having been fired from the same firearm as Items 1 and 3.
EVK3V2	The Q1 (item 2) fired bullet was microscopically examined and found to NOT have been fired from the same firearm as TF1 (item 1) based on class characteristics. (Elimination) The Q2-Q4 (items 3-5) fired bullets were microscopically examined and found to have been fired from the same firearm as TF1 (item 1). (Identification)
EWNYWJ	As a result of physical examination and microscopic comparison of the submitted evidence, it is my opinion that: A/ Item 1-3 WAS FIRED from the same weapon which fired Item 1-1 (Test Fires). “IDENTIFICATION” B/ Items 1-4 & 1-5 WERE BOTH FIRED from the same unknown weapon, capable of firing .38 caliber class ammunition. “IDENTIFICATION” C/ Item 1-2 WAS FIRED by an unknown weapon, capable of firing .38 caliber class ammunition which WAS NOT the weapon(s) which produced Items 1-1 (Test Fires), 1-3, 1-4 & 1-5. “EXCLUSION”
EZQZWF	Microscopic examination and comparison reveal that the bullets, Items 1.A and 1.C, were fired from the same firearm based on agreement of class and individual characteristics. Microscopic examination and comparison of the bullets, Items 1.D and 1.E, reveal that they were fired from

TABLE 2

WebCode	Conclusions
	the same firearm based on agreement of class and individual characteristics, and are consistent with being fired from Beretta, FN / Browning, Keltec, Ruger, Sarsilmaz, Sig Sauer, Springfield, Tanfoglio, Taurus, and Walther 9mm pistols. This list is provided only as an investigative lead and is not intended to be an all-inclusive list. Microscopic examination and comparison reveal that the bullets, Items 1.A and 1.C, were not fired from the same firearm as the bullets, Items 1.D and 1.E, based on disagreement of individual characteristics. Microscopic examination and comparison reveal that the bullet, Item 1.B, was not fired from the same firearm as the bullets, Items 1.A, 1.C, 1.D, and 1.E, based on disagreement of class characteristics. Microscopic examination of the bullet, Item 1.B, reveals that it is consistent with being fired from Astra, Jennings / Bryco, Jimenez, Llama, Sig Sauer, and Star 9mm pistols. This list is provided only as an investigative lead and is not intended to be an all-inclusive list.
F7U4KT	Item 1, 2, 3, 4, 5, These correspond to the 9mm LUGER caliber, with the following results: Item 1 vs Item 2 = negative comparison (no indentification) Item 1 vs Item 3 = positive comparison (indentification) Item 1 vs Item 4 = positive comparison (indentification) Item 1 vs Item 5 = positive comparison (indentification)
F7XNH8	Sufficient agreement of class and individual characteristics confirmed the item 001.003 expended bullet was fired from the same firearm as the item 001.001 expended bullets. Disagreement of class characteristics confirmed the item 001.002 expended bullet was not fired from the same firearm as the item 001.001 expended bullets. Disagreement of individual characteristics confirmed the item 001.004 and 001.005 expended bullets were not fired from the same firearm as the item 001.001 expended bullets.
FAUA47	Item 3 was fired in the same firearm as the item 1 test fires. Item 2 was fired in a second firearm. Item 2 is consistent with a bullet from ammunition designated 9mm Luger. A list of makes of firearms which are common to the [Laboratory] region and may have fired this item includes but is not limited to: Smith & Wesson, Sig Sauer, Jimenez Arms, Hi-Point Firearms, Star, and Bryco Arms. Items 4 and 5 were fired in a third firearm. Items 4 and 5 are consistent with bullets from ammunition designated 9mm Luger. A list of makes of firearms which are common to the [Laboratory] region and may have fired these items includes but is not limited to: FMBUS (Ghost Gun), Ruger, Springfield Armory, Taurus, Beretta, CZ (Ceska Zbrojovka), Sig Sauer, Stoeger Arms, Keltec, and Kahr Arms.
FH37LG	As a result of physical examination and microscopic comparison of the submitted evidence, it is my opinion that: A/ Item 1-3 WAS FIRED from the same weapon which fired Item 1-1 (Test Fires). “IDENTIFICATION” B/ Items 1-4 & 1-5 WERE BOTH FIRED from the same unknown weapon, capable of firing .38 caliber class ammunition. “IDENTIFICATION” C/ Item 1-2 WAS FIRED by an unknown weapon, capable of firing .38 caliber class ammunition which WAS NOT the weapon(s) which produced Items 1-1 (Test Fires), 1-3, 1-4 & 1-5. “EXCLUSION”
FQEZ36	The projectile in Item 3 was fired in the same gun that fired the test fired projectiles in Item 1, based on agreement observed in individual characteristics. The projectile in Item 2 was not fired in the same gun that fired the test fired projectiles in Item 1, based on differences observed in class characteristics. The projectiles in Items 4 and 5 bear class characteristics consistent with those produced by the gun that fired the test fired projectiles in Item 1. However, no significant similarities in individual characteristics were observed.
FRD63K	1) Evidence bullet item 3 has been fired in the evidence firearm seized Sig Sauer P365. 2) Evidence bullets items 4 and 5 have been fired in the same other unknown firearm. 3) Evidence bullet item 2 has been fired in other unknown firearm.
FRTQA2	The Item 2 bullet was excluded as having been fired from the barrel of the same firearm as the Item 1, 3, 4, and 5 bullets due to observable and measurable differences in the land and

TABLE 2

WebCode	Conclusions
	groove impression widths. The Item 3 bullet was identified as having been fired from the barrel of the same firearm as the Item 1 bullets. The Item 4 and 5 bullets were identified as having been fired from the barrel of the same firearm; however, pattern examinations of the Item 4 and 5 bullets and the Item 1 and 3 bullets were inconclusive due to insufficient quality and/or quantity of corresponding individual characteristics.
FWMK83	ITEM 3 CORRESPONDS TO ITEM 1 (PISTOL PATTERN), ITEM 2 DOES NOT CORRESPOND TO ANY SAMPLE, ITEMS 4 AND 5 CORRESPOND TO EACH OTHER, BUT NOT TO ITEM 1 (PISTOL PATTERN).
FXCT9D	Items 1 through 5. The Item 3 bullet was Identified to the Item 1 bullets. The Item 4 and 5 bullets were Identified to each other and Eliminated from the Item 1 and 3 bullets. These bullets have design features consistent with bullets loaded in 9mm Luger caliber cartridges and display rifling characteristics similar to firearms by numerous manufacturers. The Item 2 bullet was Eliminated from the Item 1 and 3 bullets and Eliminated from the Item 4 and 5 bullets based on a difference in class characteristics. This bullet has design features consistent with bullets loaded in 9mm Luger caliber cartridges and displays rifling characteristics similar to firearms by numerous manufacturers.
G6GRP9	The bullets in items 1 and 3 were fired from the same gun. The bullets in items 4 and 5 were fired from the same gun, but it is not item 1.
G6ZVX9	The four bullets in items 2, 3, 4, and 5 were 9mm bullets which had been fired from the barrel of a weapon rifled with six lands and grooves, right twist. The bullet in item 3 was determined to have been fired from the same weapon as the three (known) bullets in item 1. The three bullets in items 2, 4, and 5 were determined not to have been fired from the same weapon as the three (known) bullets in item 1. The two bullets in items 4 and 5 were fired from one weapon. The bullet in item 2 was fired from a different weapon than the three bullets in items 3, 4, and 5. Item 1 was used for comparison. Further analysis of items 2, 4, and 5 is pending submission of two more 9mm weapons for additional comparisons.
G7N9GD	SUBMISSION 1-2: The bullet was eliminated from the submissions 1-1, 1-3, 1-4, and 1-5 bullets. Manufacturers/brands of firearms that could have fired this projectile include, but are not limited to: Astra, Bryco, Colt, Hi-Point Firearms, Intratec, Jennings/Bryco, Jimenez Arms, Llama, Lorcin, Sig Sauer, Smith & Wesson, and Walther. SUBMISSION 1-3: The bullet was identified to the submission 1-1 bullets. SUBMISSION 1-4 and 1-5: The bullets were identified to each other and eliminated from the submission 1-1 bullets. Manufacturers/brands of firearms that could have fired these projectiles include, but are not limited to: Beretta, Browning, Canik, Colt, Fabrique Nationale, Heckler & Koch, Hi-Point Firearms, Keltec, Palmetto State Armory, Polymer80, Remington, Ruger, Sig Sauer, Springfield Armory, Taurus, and Walther.
GEYTF4	Item 3 was fired in the same firearm as the item 1 test fires. Items 4 and 5 were fired in a second firearm. Items 4 and 5 are consistent with bullets from ammunition designated 9mm Luger. A list of makes of firearms which are common to the [Laboratory region and may have fired this item includes, but is not limited to: FMBUS/Glock Aftermarket, Springfield Armory, Ruger, Taurus, Sig Sauer, Kahr Arms, and CZ (Ceska Zbrojovka). Item 2 was fired in a third firearm. Item 2 is consistent with a bullet from ammunition designated 9mm Luger. A list of makes of firearms which are common to the [Laboratory region and may have fired this item includes, but is not limited to: Smith & Wesson, Sig Sauer, Taurus, Jimenez Arms, Star, and Hi-Point Firearms.
GHULBJ	The above tested fired bullets marked #1 were examined and microscopically compared to the bullet marked #3 with positive results (Identification). The bullet marked #3 was discharged

TABLE 2

WebCode	Conclusions
	from the 9mm Luger caliber Sig Sauer semi-automatic pistol. The above test fired bullets marked #1 were examined and microscopically compared to the bullet marked #2 with negative results (Elimination). The bullet marked #2 was not discharged from the 9mm Luger caliber Sig Sauer semi-automatic pistol. The above tested fired bullets marked #1 were examined and microscopically compared to the bullets marked #4 and #5 with inconclusive results. The bullets marked #4 and #5 were examined and microscopically compared to each other with positive results (Identification). The bullets marked #4 and #5 were discharged from the same firearm. The bullets marked #2 were examined and microscopically compared to the bullets marked #4 and #5 with negative results (Elimination). The bullet marked #2 was not discharged from the same unknown firearm as bullets #4 and #5.
GR6NWK	Item 3 was microscopically compared with test fired specimens from Item 1, finding correspondence of class characteristics and individual distinguishing characteristics. It was concluded that Item 3 was fired by the Item 1 firearm. Item 2 was microscopically compared with Item 1, finding class characteristic differences (rifling width disparity). It was concluded that Item 2 was not fired by the Item 1 firearm. Item 2 was microscopically compared with Items 4 and 5, finding class characteristic differences. It was concluded that Item 2 was not fired by the same firearm as Items 4 and 5 (firearms not submitted). Items 4 and 5 were microscopically intercompared, finding class and individual distinguishing characteristic correspondence. It was concluded that Items 4 and 5 were both fired by the same firearm (firearm not submitted). Items 4 and 5 were microscopically compared with test fired specimens from Item 1, finding both limited class and individual characteristic correspondence and differences. It was concluded that Items 4 and 5 could not be identified to nor excluded from having been fired by the Item 1 firearm. Poor quality markings and reproduction observed on Items 4 and 5; middling quality markings and reproduction observed in Item 1; as well as a lack of an actual firearm submitted for examination and lack of relevant case information were limiting factors in the analysis. It is possible the Item 4 and 5 bullets were either fired by the 1 firearm or fired by a second firearm (firearm not submitted).
GTZ8XL	Lab Items #1 (three 9mm Luger test fired projectiles from Sig Sauer P365), #2 (~.38 caliber family FMJ fired projectile), #3 (9mm Luger FMJ fired projectile), #4 (~.38 caliber family FMJ fired projectile), and #5 (~.38 caliber family FMJ fired projectile) were examined and microscopically compared between 10/29/2025 and 10/30/2025. Based on agreement of all discernable class characteristics and sufficient agreement of individual characteristics, Lab Item #3 (9mm Luger FMJ fired projectile) was positively identified as having been fired in the same firearm as Lab Item #1(three 9mm Luger test fired projectiles from Sig Sauer P365). Based on agreement of all discernable class characteristics and sufficient agreement of individual characteristics, Lab Item #4 (~.38 caliber family FMJ fired projectile) was positively identified as having been fired in the same firearm as Lab Item #5 (~.38 caliber family FMJ fired projectile). Based on disagreement of individual characteristics, Lab Items #4 and #5 (two ~.38 caliber family FMJ fired projectiles) were eliminated as having been fired in the same firearm as Lab Items #1 (three 9mm Luger test fired projectiles from Sig Sauer P365) and #3 (9mm Luger FMJ fired projectile). Based on disagreement of class characteristics, Lab Item #2 (~.38 caliber family FMJ fired projectiles) was eliminated as having been fired in the same firearm as Lab Items #1 (three 9mm Luger test fired projectiles from Sig Sauer P365), #3 (9mm Luger FMJ fired projectile), #4 and #5 (two ~.38 caliber family FMJ fired projectiles).
GW4XB7	Microscopic comparison examinations were conducted between QB-1 through QB-4, and test ammunition fired from K-1, resulting in the following conclusions: QB-2 was fired from K-1 based on correspondence of all discernable class characteristics and sufficient agreement of individual characteristics. QB-3 and QB-4 were fired from the same unknown firearm based

TABLE 2

WebCode	Conclusions
	on correspondence of all discernable class characteristics and sufficient agreement of individual characteristics. QB-1 was not fired from K-1 nor the same firearm that fired QB-3 and QB-4 based on a disagreement of class characteristics. QB-3 and QB-4 were not fired from K-1 based on correspondence of all discernable class characteristics and sufficient disagreement of individual characteristics.
GYRACW	the recovered bullet, item 3, was discharged from the suspect's firearm, a Sig Sauer P365. This is based on agreement of class and individual characteristic markings in the leas and geas.
H2R3HZ	Once the CTS 2025-5262 test with laboratory [Participant/Webcode] was received, the individualization marking of each item was carried out, obtaining the following conclusions: Article 1: Three known test bullets, fired from the suspect's weapon. Answer: The three bullets match by identity and origin with the bullet found in item identified as box number 3. Article 2 Questionable recovered bullet. Answer: It does not share any characteristics with the other items listed. Article 3 Questionable recovered bullet. Answer: One bullet matches in identity and origin with the bullets found in the item identified as box number 1. Article 4 Questionable recovered bullet. Answer: One of the bullets matches in identity and origin with the bullet found in the item identified as box number Article 5 Questionable recovered bullet. Answer: One of the bullets matches in identity and origin with the bullet found in the item identified as box number 4. Once all items have been checked, the relationship of three weapons involved is determined.
HECJ4E	Microscopic examination and comparison reveal that the bullets, Items 1.A and 1.C, were fired from the same firearm based on agreement of class and individual characteristics. Microscopic examination and comparison of the bullets, Items 1.D and 1.E, reveal that they were fired from the same firearm based on agreement of class and individual characteristics, and are consistent with being fired from Beretta, Diamondback. Keltec, Ruger, and Sig Sauer 9mm pistols. This list is provided only as an investigative lead and is not intended to be an all-inclusive list. Microscopic examination and comparison reveal that the bullets, Items 1.A and 1.C, were not fired from the same firearm as the bullets, Items 1.D and 1.E based on disagreement of individual characteristics. Microscopic examination and comparison reveal that the bullet, Item 1.B, was not fired from the same firearm as the bullets, Items 1.A, 1.C, 1.D, 1.E based on disagreement of class characteristics. Microscopic examination of the bullet, Item 1.B, reveals that it is consistent with being fired from Sigarms, Astra, Bryco Arms, Jennings/Bryco, Jimenez Arms, and Luger 9mm pistols. This list is provided only as an investigative lead and is not intended to be an all-inclusive list.
HG9V9R	1. The bullets marked E-1 through E-3 ("Item" 1) and E-4 ("Item" 3), corresponding to exhibit 1, are 9mm caliber, with right-hand rifling (R-6), and were fired from the same firearm (Identification). 2. The bullets marked E-5 ("Item" 4) and E-6 ("Item" 5), corresponding to exhibit 1, are 9mm caliber, with right-hand rifling (R-6), and were fired from the same firearm (Identification). 3. The bullet marked E-7 ("Item" 2), corresponding to exhibit 1, is a 9mm caliber, right-hand rifling (R-6), and was not fired from the firearm used to fire the bullets marked E-1 through E-3 ("Item" 1) and E-4 ("Item" 3), corresponding to exhibit 1 (Elimination). 4. The bullet marked E-7 ("Item" 2), corresponding to exhibit 1, is a 9mm caliber, right-hand rifling (R-6), and was not fired from the firearm used to fire the bullets marked E-5 ("Item" 4) and E-6 ("Item" 5), corresponding to exhibit 1 (Elimination).
HQVU2J	1.Questioned recovered bullet (item 3), was discharged from the same firearm as the known tested-fired bullets (item 1). 2.Questioned recovered bullets (item 4 and item 5), were discharged from the same firearm, but from a different firearm than the known tested-fired bullets (item 1) and questioned recovered bullet (item 3). 3. Questioned recovered bullet (item

TABLE 2

WebCode	Conclusions
	2), was discharged from a different weapon than the other known tested-fired bullets (item 1) and questioned recovered bullets (items 3, 4 and 5).
HWUH9C	Exhibit 3 (questioned recovered projectile) was identified as having been fired in the same firearm as exhibit 1 (test-fired projectiles). Exhibits 4 and 5 (questioned recovered projectiles) 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 2 (questioned recovered projectile) was determined to have been fired in a third 9mm firearm based on differences in class characteristics. Suspect weapons are unknown at this time; however, any suspect weapon should be submitted to the laboratory for analysis.
HZT29P	1) Examination of Exhibit 1 revealed three fired .38 caliber class bullets consistent with those normally loaded into 9x19mm cartridges. a. Exhibit 1 is suitable for microscopic comparison. b. Each bullet of Exhibit 1 contains six lands and grooves with a right-hand twist. 2) Examination of Exhibits 2 through 5 revealed each contains one fired .38 caliber class bullet consistent with those loaded into 9x19mm cartridges. a. Exhibits 2 through 5 are suitable for microscopic comparison. b. Exhibits 2 through 5 each contains six lands and grooves with a right-hand twist. 3) Microscopic comparison of Exhibits 1 through 5 revealed the following: a. Exhibits 1 and 3 were fired from the same firearm due to a sufficient agreement of individual characteristics. b. Exhibits 4 and 5 were fired from the same firearm due to a sufficient agreement of individual characteristics. c. Exhibits 1 and 3 were not fired from the same firearm as Exhibits 4 and 5 due to a sufficient disagreement of individual characteristics. d. Exhibits 1 and 3 were not fired from the same firearm as Exhibit 2 due to a disagreement of class characteristics. e. Exhibits 4 and 5 were not fired from the same firearm as Exhibit 2 due to a disagreement of class characteristics. 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.
J3KDTT	Items 2, 3, 4, & 5 were microscopically examined and compared to Item 1 with the following results: Items 4 and 5 were microscopically examined and determined to have agreement in class and individual characteristics (striations) and determined to be discharged in the same unknown firearm (Firearm 1), however items 4 & 5 were determined to be Inconclusive to item 1 due to an agreement in class and individual characteristics but not enough for a conclusive result. Item 3 was microscopically compared to item 2 and was eliminated due to a difference in class characteristics (LEA size) and is inconclusive to items 4 & 5 due to an agreement in class and individual characteristics but not enough for a conclusive result. Item 3 was examined to item 1 and determined to be fired in the same known firearm. Item 2 was microscopically compared to item one and eliminated due to a difference in class characteristic (LEA size).
J4FVVV	item 3 was identified as having been fired from the suspect's firearm. items 2,4 and 5 were found to have not been fired from the suspects firearm.
J72FZY	Results of Examinations: Item 1 consists of three bullets, which were reported to be test fires from a 9mm Luger Sig Sauer Pistol, Model P365. Item 2 through 5 are 9mm/.38 caliber bullets which were fired from a barrel rifled with 6 grooves, right twist. The Item 3 bullet was

TABLE 2

WebCode	Conclusions
	identified as having been fired from the same barrel as the Item 1 test fires. The Item 4 and 5 bullets were identified as having been fired from the same barrel. The Item 2 bullet was eliminated from having been fired from the same barrel as the Item 1 test fires and the Item 3, 4, and 5 bullets. A pattern examination of the Item 1 and 3 bullets compared to the Item 4 and 5 bullets was inconclusive due to insufficient quality and/or quantity of corresponding individual characteristics.
J77XYX	One of the questioned recovered bullets (Item 3) was fired in the same firearm that fired the test-fired bullets (Item 1). Two of the questioned recovered bullets (Items 4 and 5) were fired in a second firearm. The remaining questioned recovered bullet (Item 2) was fired in a third firearm.
JACVZC	Microscopic examination and comparison reveal that the bullets, Items 1.A and 1.C, were fired from the same firearm based on agreement of class and individual characteristics. Microscopic examination and comparison of the bullets, Items 1.D and 1.E, reveal that they were fired from the same firearm based on agreement of class and individual characteristics, and are consistent with being fired from Beretta, FN/Browning, Heckler & Koch, Keltec, Ruger, Sarsilmaz, Springfield, Tanfoglio, and Taurus 9mm pistols. This list is provided only as an investigative lead and is not intended to be an all-inclusive list. Microscopic examination and comparison reveal that the bullets, Items 1.A and 1.C, were not fired from the same firearm as the bullets, Items 1.D and 1.E, based on disagreement of individual characteristics. Microscopic examination and comparison reveal that the bullets, Items 1.A, 1.C, 1.D, and 1.E, were not fired from the same firearm as the bullet, Item 1.B, based on disagreement of class characteristics. Microscopic examination of the bullet, Item 1.B, reveals that it is consistent with being fired from Astra, Llama, Sig Arms, Sig Sauer, Smith and Wesson, Star, and Taurus 9mm pistols. This list is provided only as an investigative lead and is not intended to be an all-inclusive list.
JAX9NP	Conclusions: 1. The fired bullet, item 3, was fired from the same firearm that fired the test-fired bullets item 1, the first (1st) firearm. 2. The fired bullet, item 2, was fired from an unknown second (2nd) firearm. 3. The fired bullets, item 4 and item 5, were fired from an unknown third (3rd) firearm.
JCUKU3	The below listed spent item was macroscopically and microscopically examined and compared with test fires (Lab Evidence# 001-A1) from the Sig Sauer 9mm Luger firearm. It is my opinion that the below listed item was fired from this firearm (identification). Lab Evidence# Item# Item Description 001-A3 3 Spent 38/9mm caliber bullet The below listed spent items were macroscopically and microscopically examined and compared with test fires (Lab Evidence# 001-A1) from the Sig Sauer 9mm Luger firearm and to the spent bullet (Lab Evidence# 001-A3). It is my opinion that these items were not fired from the same firearm (elimination). The spent items were further microscopically compared to each other. It is my opinion that the below listed items were fired from the same unknown firearm (identification). Lab Evidence# Item# Item Description 001-A4 4 Spent 38/9mm caliber bullet 001-A5 5 Spent 38/9mm caliber bullet The below listed spent item was macroscopically and microscopically examined and compared with test fires (Lab Evidence# 001-A1) from the Sig Sauer 9mm Luger firearm and to the spent bullet (Lab Evidence# 001-A3). It is my opinion that this item was not fired from the same firearm (elimination). The spent item was further microscopically compared to the spent bullets (Lab Evidence# 001-A4, 001-A5). It is my opinion that this item was not fired from the same firearm (elimination). Lab Evidence# Item# Item Description 001-A2 2 Spent 38/9mm caliber bullet [Participant submitted data in a format that could not be reproduced in this report.]

TABLE 2

WebCode	Conclusions
JRF3GY	The four bullets (1A to 1C, 3) were identified as having been fired from the same firearm. The bullet (2) was eliminated as having been fired from the same firearm as the other six bullets (1A to 1C, 3 to 5). The two bullets (4, 5) were identified as having been fired from the same firearm. The two bullets (4, 5) could neither be identified nor eliminated as having been fired from the same firearm as the other four bullets (1A to 1C, 3). There is agreement of discernible class characteristics and disagreement of individual characteristics, but insufficient for an elimination.
JTF3M4	Item 3 was fired from the suspect's Sig Sauer pistol. Items 2, 4, and 5 were not fired from the suspect's Sig Sauer pistol. Items 4 and 5 were fired from the same unknown firearm.
JZC6GP	Test to Item 2 - Elimination (Class - width of LEAs) Test to Item 3 - Identification. Test to Item 4 - Elimination Test to Item 5 - Elimination Item 4 and Item 5 - ID ***** Firearm 1 - Test 1 and Item 3 Firearm 2 - Item 2 Firearm 3 - Item 4 and Item 5.
JZCZ42	Item 3 was fired in the same firearm as the item 1 test fires. Item 2 was fired in a second firearm. Item 2 is consistent with a bullet designated 9mm Luger. A list of makes of firearms that may have fired this item is not provided due to its extensive length. Items 4 and 5 were fired in a third firearm. Items 4 and 5 are consistent with bullets from ammunition designated 9mm Luger. A list of makes of firearms that may have fired these items is not provided due to its extensive length.
K63W7X	The Item 1 fired bullets are consistent in class characteristics with the Items 3, 4 and 5 fired bullets. The Item 2 fired bullet is not consistent in class characteristics with the Items 1, 3, 4 and 5 fired bullets. Due to dissimilarities in class characteristics, the Item 2 bullet was eliminated as having been fired from the same firearm as the Item 1 bullets. Items 1 and 3, all 9mm caliber bullets, were identified as having been fired from the same firearm. Items 4 and 5, both 9mm caliber bullets, were identified as having been fired from the same firearm. The Item 1 bullets have the same general rifling class characteristics as the Items 4 and 5 bullets. Microscopic examination revealed sufficient differences in individual characteristics to eliminate Item 1 as having been fired from the same firearm as the Items 4 and 5 bullets 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.
K7XE8Y	Item 2 was shot with the firearm in question. Items 4 and 5 are shot with same firearm, which is not tha same as the firearm in question.
K8RYGQ	The questioned bullet identified as ITEM 3 recovered from the crime scene, was fired by the handgun Sig Sauer P365, seized from the suspect. The three questioned bullets identified as ITEM 2, ITEM 4 and ITEM 5 recovered from crime scene, were not fired by the handgun Sig Sauer P365 seized from the suspect.
K8WFFP	1. The bullets marked E-1 through E-3 (Item 1) and the bullet marked E-4 (Item 3), corresponding to exhibit 1, are 9mm caliber, with right-hand rifling (R-6), and were fired by the same firearm (Identification). 2. The bullet marked E-5 (Item 4) and the bullet marked E-6 (Item 5), corresponding to exhibit 1, are 9mm caliber, with right-hand rifling (R-6), and were fired by the same firearm (Identification). 3. The bullet marked E-7 (Item 2), corresponding to exhibit 1, is 9mm caliber, with right-hand rifling (R-6), and was fired from a firearm; however, it was not fired from the firearms used to fire the bullets marked E-1 through E-3 (Item 1), the bullet marked E-4 (Item 3), the bullet marked E-5 (Item 4), and the bullet marked E-6 (Item 5), corresponding to exhibit 1 (Elimination).

TABLE 2

WebCode	Conclusions
KAKRGF	EL ITEM 3 FUE DISPARADO POR EL ARMA DE FUEGO A ESTUDIO CON SUS TESTIGOS PROPORCIONADOS [Requested translation was not provided by time of publication.]
KCK6R9	The Item 3 bullet was Identified to the Item 1 bullets. The Item 4 and 5 bullets were Identified to each other and Eliminated from the Item 1 and 3 bullets. Their design features are consistent with bullets loaded in 9mm Luger caliber ammunition, and they display rifling characteristics similar to firearms by numerous manufacturers. The Item 2 bullet was Eliminated from the Item 1 and 3 bullets as well as the Item 4 and 5 bullets based on difference in class characteristics. Its design features are consistent with bullets loaded in 9mm Luger caliber ammunition, and it displays rifling characteristics similar to firearms by numerous manufacturers.
KCPK79	From the general rifling characteristics and fine detail within the LEAs we are of the opinion that Item 3 has been discharged in the recovered SIG Sauer firearm. Items 4 & 5 although the general rifling characteristics are similar to the test fires the fine detail does not correspondent. We are of the opinion these were not discharged in recovered firearm but were both discharged in the same firearm. We are of the opinion that Item2 was not discharged in the recovered Sig Sauer firearm. It was not discharged in the same firearm as Items 4&5. We are of the opinion that the recovered firearm and another 2 firearms were discharged at the scene.
KCZQZP	Bullet Analysis: Methodology: Physical (Visual Examination) Electronic Balance/Caliper/Digital Micrometer Microscopy (Comparison Microscope) Items 1B, 1C, 1D, and 1E (Items 2, 3, 4, and 5) are 38 caliber class bullets based upon the diameter. Item 1C (Item 3), the bullet, was fired through the barrel of Item 1A (Item 1), the Sig Sauer pistol, based upon corresponding class and individual microscopic characteristics. Items 1D and 1E (Items 4 and 5), the bullets, were fired through the barrel of the same firearm based upon corresponding class and individual microscopic characteristics. Items 1D and 1E (Item 4 and 5), the bullets, were not fired through the barrel of Item 1A (Item 1), the Sig Sauer pistol, based upon different individual microscopic characteristics. Item 1B (Item 2), the bullet, was not fired through the barrel of Item 1A (Item 1), the Sig Sauer pistol, based upon different class characteristics. Item 1B (Item 2), the bullet, was not fired through the barrel of the same firearm as Items 1D and 1E (Items 4 and 5), the bullets, based upon different class characteristics. Opinion/Interpretation: Items 1B, 1C, 1D, and 1E (Items 2, 3, 4, and 5) are consistent with bullets loaded in 9mm Luger caliber cartridges based upon the weight and style.
KEDW8Y	CONCLUSIONS After conducting the comparative study of the four (4) incriminated bullets received for examination, identified as items 2, 3, 4, and 5, IDENTIFICATION was determined only between the incriminated bullets identified as items 4 and 5. After conducting the comparative study of the two (2) incriminated bullets identified as items 2 and 3, NON-IDENTIFICATION was determined between them, meaning they were fired by two different firearms. After conducting the comparative study of the four (4) incriminated bullets, caliber 9 mm, identified as items 2, 3, 4, and 5, it was determined that three (3) firearms were involved. After conducting the comparative study of the bullets received as reference from the Sig Sauer pistol, model P365, related as item 1, with each of the incriminated bullets identified as items 2, 3, 4, and 5, the same class characteristics and sufficient individual characteristics were found to determine IDENTIFICATION only with the incriminated bullet identified as item 3. Therefore, the incriminated bullet identified as item 3 was fired by the Sig Sauer pistol, model P365.
KJMCE3	On examination, I found: a) The characteristics marks on the questioned recovered bullet Item 3 to be similar to the characteristic marks on the known test-fired bullets discharged from the suspect's firearm Item 1. b) The characteristics marks on the questioned recovered bullet Item 2, Item 4 and Item 5 to be dissimilar to the characteristic marks on the known test-fired bullets

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	discharged from the suspect's firearm Item 1. Therefore, I am of the opinion that: a) The recovered bullets Item 3 are fired from the suspect's firearm Item 1. b) The recovered bullets Item 2, Item 4 and Item 5 were fired from the suspect's firearm Item 1.
KN2PJV	ITEM SUMMARY OF RESULTS AND INTERPRETATIONS 1.1-1.5 The expended bullets were all originally components of 9mm class caliber cartridges that had been fired in a barrel(s) with 6 lands and grooves of conventional style rifling with a right hand twist. - Items 1.1 and Item 1.2 were microscopically examined and compared. Based on the observed disagreement of class characteristics, Item 1.2 is eliminated as having been fired from the same firearm as Item 1.1. - Item 1.1 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 same firearm as Item 1.1. - Items 1.1 and Items 1.4 & 1.5 were microscopically examined and compared. Based on the observed disagreement of Individual characteristics, Items 1.4 & 1.5 are eliminated as having been fired from the same firearm as Item 1.1. - Item 1.4 and Item 1.5 were microscopically examined and compared. Based on the observed agreement of their class characteristics and sufficient agreement of their individual characteristics, Items 1.4 and 1.5 are identified as having been fired from the same unknown firearm. - Item 1.4, 1.5 and Item 1.2 were microscopically examined and compared. Based on the observed disagreement of class characteristics, Item 1.2 is eliminated as having been fired from the same firearm as Items 1.4 and 1.5.
KPCPGP	The test-fired bullets identified as Item 1 were fired from the same weapon wich fired the questioned bullet identified as Item 3. The test-fired bullets identified as Item 1 were not fired from the same weapon(s) wich fired the questioned bullets identified as Item 2, Item 4, and Item 5.
KQ6HFF	The bullet from the Item 3 wears similar characteristics as the 3 fired bullets from the suspect weapon. So the bullet from Item 3 was fired in the seized firearm (Item 1). On the other hand, the 3 bullets 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. Howerver we can see that the bullets from Item 4 and Item 5 wear similar characteristics. They were fired in a same firearm. In conclusion : - Bullet from Item 3 was fired in the seized firearm, as the bullets from Item 1. - Bullets from Item 4 and Item 5 were fired in a second one. - Bullet from Item 2 was fired in a third firearm.
KT8MKA	Comparison microscope examinations were conducted on the evidence listed above. The findings of this examiner are the following: Exhibit 1.3 and Exhibit 1.1 were fired with the same firearm (suspect's weapon) based on sufficient agreement of individual characteristics present (firearm #1). Exhibit 1.4 and Exhibit 1.5 were fired with the same unknown firearm based on sufficient agreement of individual characteristics present (firearm #2). Exhibit 1.2 was not fired with the same firearm that fired Exhibit 1.1, Exhibit 1.3, Exhibit 1.4 or Exhibit 1.5 due to the differences in land and groove widths and individual characteristics present (firearm #3). No further analysis was conducted on the submitted evidence at this time.
KU6UAU	The four bullets (Exhibits 002 through 005) were microscopically compared to the test fired bullets from the Sig Sauer pistol (Exhibit 001). The bullet (Exhibit 002) bears different class characteristics from the test fired bullets from the Sig Sauer pistol (Exhibit 001) and the bullets (Exhibits 004 and 005). Therefore, the bullet (Exhibit 002) could be eliminated as having been fired from the Sig Sauer pistol and the firearm that the bullets (Exhibits 004 and 005) were fired from. The bullet (Exhibit 002) was determined to be most consistent with 38 caliber class ammunition (which includes 9mm, 38 Special and 380 Auto calibers) and bears six lands and

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	grooves with a right twist. A list of possible manufacturers from the FBI GRC Database with class characteristics similar to this bullet includes, but is not limited to, the following firearm manufacturers: SIG Arms and Smith and Wesson. This is a partial list containing the names of firearm manufacturers most commonly submitted to the laboratory. For a complete list, contact the Firearms Section. Any firearm bearing similar class characteristics should be considered. The bullet (Exhibit 003) bears the same class characteristics, as well as, sufficient reproducing individual characteristics for an identification as having been fired in the same firearm as the test fired bullets from the Sig Sauer pistol (Exhibit 001). The two bullets (Exhibits 004 and 005) were microscopically compared and bear the same class characteristics, as well as, sufficient reproducing individual characteristics for an identification as having been fired from the same unknown firearm. The two bullets (Exhibits 004 and 005) bear the same class characteristics as the test fired bullets from the Sig Sauer pistol (Exhibit 001); however, they lack sufficient reproducing individual characteristics for an identification or an elimination as having been fired from the Sig Sauer pistol (Exhibit 001).
KW48M9	Items 001-02 through 001-05 are nominal .38 caliber fired bullets marked by six right conventional rifling. I microscopically compared the submitted bullets to each other and to a test fired bullet reportedly test fired from a Sig Sauer P365 pistol. I observed agreement of all discernable class characteristics with sufficient agreement of individual characteristics to conclude Item 001-03 was fired from the Sig Sauer pistol. I observed agreement of all discernable class characteristics with sufficient agreement of individual characteristics to conclude Items 001-04 and 001-05 were fired from a single firearm; however, they were not fired from the Sig Sauer pistol. Due to significant disagreement of class characteristics, I concluded Item 001-02 was fired by a third firearm.
KWMDLY	The projectile in Item 3 was fired in the same gun that fired the projectiles in Item 1, based on agreement observed in individual characteristics. The projectile in Item 2 was not fired in the same gun that fired the projectiles in Item 1, based on differences observed in class characteristics. The projectiles in Items 4 and 5 bear class characteristics consistent with the projectiles in Item 1. However, no significant similarities in individual characteristics were observed.
KXZPPA	Exhibit 3 (questioned recovered projectile) was identified as having been fired in the same 9mm firearm as exhibit 1 (test-fired projectiles). Exhibits 4 and 5 (questioned recovered projectiles) were identified as having been fired in a second 9mm firearm. Suspect weapons are unknown at this time; however, any suspect weapons should be submitted to the laboratory for analysis. Exhibit 2 (questioned recovered projectile) was fired from a third firearm. Suspect weapons are unknown at this time; however, any suspect weapons should be submitted to the laboratory for analysis.
KZAV83	Items 1 & 3: Item 1 was Identified to Item 3. Item 2: The bullet was Eliminated to Items 1, 3, 4 and 5 based on a difference in class characteristics. Item 2 has design features consistent with bullets loaded in 9mm Luger caliber ammunition. There are numerous manufacturers of firearms with similar rifling characteristics. Items 4 & 5: The bullets were Identified to each other. The bullets were Inconclusive (-) to Items 1 and 3. Items 4 and 5 have design features consistent with bullets loaded in 9mm Luger caliber ammunition. There are numerous manufacturers of firearms with similar rifling characteristics.
L4BXVJ	Item #1 & Item #3 were microscopically compared to each other and were identified as having been fired from the same firearm. Item #4 & Item #5 were microscopically compared to each other and were identified as having been fired from the same firearm. Item #2 was eliminated as having been fired from the same firearm as Item #1, #3, #4, and #5 due to

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	differences in class characteristics (LAG dimensions).
L9CCBF	The Item 2 bullet was not fired by the same firearm(s) as the Item 1, 3, 4, and 5 bullets. There is agreement of all discernible class characteristics and possible individual characteristics between the Item 3 bullet and the Item 1 bullets. However, the potential for subclass carryover could not be eliminated. Therefore, the Item 3 bullet was either fired by the same firearm as the Item 1 bullets, 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 and possible individual characteristics between the Item 4 and 5 bullets. However, the potential for subclass carryover could not be eliminated. Therefore, the Item 4 and 5 bullets were either fired by the same firearm, or by a different firearm manufactured with the same tool in the same approximate state of wear. The Item 4 and 5 bullets were not fired by the same firearm as the Item 1 bullets. The Item 4 and 5 bullets were not fired by the same firearm as the Item 3 bullet.
LAFUJP	The bullet marked #3 was compared microscopically against test bullets and identified as having been discharged from the same firearm.
LBQW6N	The questioned recovered bullet labeled "Item 3" was discharged from the same firearm as the known test-fired cartridge casings (Item 1). The questioned recovered bullets labeled "Item 2", "Item 4" and "Item 5" were NOT discharged from the same firearm as the known test-fired cartridge casings (Item 1).
LDE97E	The results extremely strongly support that Item 3 was discharged from the same firearm as Item 1. The results extremely strongly support that Item 2 was not discharged from the same firearm as Item 1. The results support that Item 4 and Item 5 was not discharged from the same firearm as Item 1.
LEPBTD	The expended bullets submitted in laboratory evidence items 1 (designated as 1.2, 1.3, 1.4, and 1.5) were microscopically compared to the submitted test fired bullets (reportedly from a Sig Sauer P365 semi-automatic pistol), submitted in laboratory evidence item 1 (laboratory designated as 1.1), with the following results. Laboratory evidence item 1.3 was identified as having been fired from the same firearm as the test fired bullets submitted as laboratory item 1.1. Laboratory evidence items 1.2, 1.4 and 1.5 were eliminated as having been fired from the same firearm as item 1.1 The expended bullets contained in laboratory evidence items 1.4 and 1.5 were microscopically compared to each other with the following results. The expended bullets contained in laboratory items 1.4 and 1.5 were all identified as having been fired from the same firearm.
LJDWD9	Exhibit 3 (questioned recovered projectile) was identified as having been fired in the same .38 caliber firearm as exhibit 1, the known test-fired projectiles. Exhibits 4 and 5 (questioned recovered projectiles) were identified as having been fired in a second .38 caliber firearm. Suspect weapons are unknown at this time; however, any suspect weapon should be submitted for analysis. Exhibit 2 (questioned recovered projectile) was fired in a third .38 caliber firearm. Suspect weapons are unknown at this time; however, any suspect weapon should be submitted for analysis.
LKCZCN	1. The bullets marked E-1 to E-3 (Item 1) and E-4 (Item 3), corresponding to exhibit 1, are 9mm caliber, with rifling to the right (R-6) and were fired by the same firearm (Identification). 2. The bullets marked E-5 (Item 4) and E-6 (Item 5), corresponding to exhibit 1, are 9mm caliber, with rifling to the right (R-6) and were fired by the same firearm (Identification). 3. The bullet marked E-7 (Item 2), corresponding to exhibit 1, are 9mm caliber, with rifling to the right (R-6), was fire from a firearm and was not fired from the firearms used to fire the bullets marked from E-1 to E-3 (Item 1), E-4 (Item 3), E-5 (Item 4), and E-6 (Item 5), corresponding to exhibit 1

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	(Elimination).
M9YXQQ	Item #2 was eliminated from having been fired from Item #1 due to different land and groove dimensions. Item #3 was identified as having been fired from Item #1.
MEGUMD	Item #3 was microscopically examined and compared to Item #1 (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 from the same firearm as Item #1 (test fire). Item #2 was microscopically examined and compared to Item #1 (test fire). Based on the observed disagreement of class characteristics, Item #2 is eliminated as having been fired from the same firearm as Item #1 (test fire). Items #4 and #5 were microscopically examined and compared to Item #1 (test fire). Based on the observed disagreement of individual characteristics, Items #4 and #5 are eliminated as having been fired from the same firearm as Item #1 (test fire).
MFWPXY	Item 2 was determined to be a 9 mm Luger caliber class bullet which has been fired through a firearm having a rifling system of six (6) lands and grooves with a right twist. The list of firearms with a similar rifling pattern that could have fired item 2 was too inclusive to be of any investigative value; however a complete list of the search results will be maintained in the case file. Item 2 was microscopically examined and eliminated as having been fired from the same firearms as item 1, 3 and 4, 5 based on disagreement of discernible class characteristics. Item 3 was microscopically examined and identified as having been fired from the same firearm as item 1 knowns based on agreement of the combination of individual characteristics and all discernible class characteristics. Items 4 and 5 were determined to be 9 mm Luger caliber class bullets which have been fired through a firearm having a rifling system of six (6) lands and grooves with a right twist. The list of firearms with a similar rifling pattern that could have fired items 4 and 5 was too inclusive to be of any investigative value; however a complete list of the search results will be maintained in the case file. Items 4 and 5 were microscopically examined and identified as having been fired from the same unknown 9 mm Luger caliber firearm based on agreement of the combination of individual characteristics and all discernible class characteristics. Items 4 and 5 were microscopically examined and eliminated as having been fired from the same firearm as items 1 and 3 based on disagreement of individual characteristics.
MH7YPV	Item 3 was identified as having been fired from the same firearm as Item 1 based on the correspondence of all discernable class characteristics and sufficient agreement of individual characteristics. Item 2 was eliminated from having been fired from the same firearm as Item 1 and Item 3 through Item 5 due to disagreement of discernable class characteristics. Item 4 and Item 5 could not be identified or eliminated as having been fired in the same firearm as Item 1 and Item 3 due to insufficient agreement or disagreement of individual characteristics, however similarities in class characteristics were noted.
MN6NWP	Item 2 was not fired in either the Sig Sauer firearm or the same firearm as Item 4. Item 3 was fired in the Sig Sauer firearm. Items 4 and 5 were fired in the same unknown firearm but not the Sig Sauer firearm.
MPYCG6	Items 1A, 1B and 1C were three nominal 9mm/.38 caliber bullets (includes 9mm Luger) reportedly fired from the suspect's firearm (known). All three bullets were fired by a gun with six lands and grooves of conventional right twist rifling. Items 2, 3, 4 and 5 (the questioned bullets) were all nominal 9mm/.38 caliber bullets (includes 9mm Luger) fired by a gun with six lands and grooves of conventional right twist rifling. Item 2 was compared to item 1B (known) using a comparison microscope. Differences in class characteristics (land and groove width) were observed to conclude that item 2 was not fired from the same firearm as the known

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WebCode	Conclusions
	bullets (item 1). Item 3 was compared to items 1A, 1B and 1C (knowns) using a comparison microscope. Sufficient agreement of class and individual characteristics was observed to conclude that item 3 was fired from the same firearm as the known bullets (item 1). Item 4 was compared to item 5 using a comparison microscope. Sufficient agreement of class and individual characteristics was observed to conclude that items 4 and 5 were fired from the same firearm. Item 4 was compared to items 1A, 1B and 1C (knowns) and item 3 using a comparison microscope. Although class characteristics agreed, significant disagreement of individual characteristics was observed to conclude that item 4 was not fired from the same firearm as the known bullets (item 1). Item 5 was compared to items 1A, 1B and 1C (knowns) and item 3 using a comparison microscope. Although class characteristics agreed, significant disagreement of individual characteristics was observed to conclude that item 5 was not fired from the same firearm as the known bullets (item 1). Item 2 was compared to item 4 using a comparison microscope. Differences in class characteristics (land and groove width) were observed to conclude that item 2 was not fired from the same firearm that fired items 4 and 5.
MQF4Z2	The bullet Q2 (item 3) is identified as having been fired with the K1 Sig Sauer P365 firearm (item 1). The bullets Q3 (item 4) and Q4 (item 5) are identified as having been fired with the same unknown firearm. The bullet Q1 (item 2) is excluded as having been fired with the K1 Sig Sauer P365 firearm (item 1), or the same unknown firearm(s) as bullets Q2 (item 3), Q3 (item 4) and/or Q4 (item 5) based on sufficient disagreement of land and groove impression widths. The bullets Q3 (item 4) and Q4 (item 5) are excluded as having been fired with the K1 Sig Sauer P365 firearm (item 1) based on sufficient disagreement of individual characteristics. The bullet Q2 (item 3) is excluded as having been fired with the same unknown firearm as bullets Q3 (item 4) and Q4 (item 5) based on sufficient disagreement of individual characteristics.
MWW4NE	Examinations showed Item 2.1 (J-1) was not discharged from the same firearm as the known test-fired bullets. Examinations showed Item 3.1 (J-2) was discharged from the same firearm as the known test-fired bullets. Examinations showed Items 4.1 (J-3) and 5.1 (J-4) were not discharged from the same firearm as the known test-fired bullets, but they were discharged from the same unknown firearm.
N6UUEU	Evidence Submitted: Item 1: three (3) test fired bullets from Sig Sauer model P365 pistol Item 2: one (1) fired bullet Item 3: one (1) fired bullet Item 4: one (1) fired bullet Item 5: one (1) fired bullet Results/Conclusions: The fired bullet, item 3, was identified as having been fired in the Sig Sauer pistol, item 1. The two (2) fired bullets, items 4 and 5, were eliminated as having been fired in the Sig Sauer pistol, item 1. The two (2) fired bullets, items 4 and 5, were each identified as having been fired in the same unknown firearm. The fired bullet, item 2, was eliminated as having been fired in the Sig Sauer pistol, item 1, as well as the same unknown firearm as items 4 and 5. The fired bullet, item 2, is consistent with bullets in a 38 caliber loading (most likely a 9mm Luger). A list of the most likely make/model of firearm used to fire the bullet has been generated from the AFTE General Rifling Characteristics Database and is included in the case notes. The two (2) fired bullets, items 4 and 5, are consistent with bullets in a 38 caliber loading (most likely a 9mm Luger). A list of the most likely make/model of firearm used to fire the bullet has been generated from the AFTE General Rifling Characteristics Database and is included in the case notes. NOTE: The possibility exists that the firearm used to fire the bullet(s) is not included on the GRC list. Any suspected firearm found should be submitted to the laboratory for analysis. Digital images were taken of all items of evidence and will be attached to the case file. Conclusion Qualifying Statements Identification: There is sufficient agreement of unique/individual marks on two or more items to conclude that the marks were created by the same source (tool/firearm). The conclusion that sufficient agreement for identification exists between two marks means that the likelihood another source could have

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	made the questioned marks is so remote as to be considered a practical impossibility. Elimination: There is significant differences in marks between two or more items, whether general (class) or individual, to conclude that the marks were not created by the source (tool/firearm). Inconclusive: There is insufficient quality and/or quantity of unique/individual characteristics to identify or eliminate two marks as having been created by the same source (tool/firearm). An inconclusive conclusion can result from a lack of sufficient microscopic similarities, a lack of sufficient microscopic dissimilarities, or a lack of any observed similarities or dissimilarities. Note: The reasoning for an inconclusive result will be documented in the report.
NANLNC	Bullets from items 4 and 5 were fired from one same firearm, possibly from the same make and model than the questioned firearm. Bullet from item 2 was fired from a third firearm, being from a different model.
NAYRF9	Microscopic examination and comparison reveal that the bullets, Items 1.A and 1.C, were fired from the same firearm based on agreement of class and individual characteristics. Microscopic examination and comparison of the bullets, Items 1.D and 1.E, reveal that they were fired from the same firearm based on agreement of class and individual characteristics, and are consistent with being fired from Beretta, Canik, Heckler and Koch, Keltec, Palmetto State Armory, Ruger, SAR Arms/ Sarsilmaz, Sig Sauer, Springfield Armory, Taurus and Tisas 9mm pistols. This list is provided only as an investigative lead and is not intended to be an all-inclusive list. Microscopic examination and comparison reveal that the bullets, Items 1.A and 1.C, were not fired in the same firearm as the bullets, Items 1.D and 1.E, based on disagreement of individual characteristics. Microscopic examination and comparison reveal that the bullet, Item 1.B, was not fired in the same firearm as the bullets, Items 1.A and 1.C, based on disagreement of class characteristics. Microscopic examination and comparison reveal that the bullet, Item 1.B, was not fired in the same firearm as the bullets, Items 1.D and 1.E, based on disagreement of class characteristics. Microscopic examination of the bullet, Item 1.B, reveals that it is consistent with being fired from Bryco Arms/ Jennings/Bryco, Jimenez Arms, Lorcin, Sig Arms/ Sig Sauer, and Smith and Wesson 9mm pistols. This list is provided only as an investigative lead and is not intended to be an all-inclusive list.
NB9WTW	Item 3 was fired in the same firearm as the item 1 test fires. Items 4 and 5 were fired in a second firearm. Items 4 and 5 are consistent with bullets from ammunition designated 9mm Luger. A list of makes of firearms which are common to the [Laboratory] region and may have fired these items includes, but is not limited to: FMBUS (Ghost Gun), Springfield Armory, Ruger, Taurus, Beretta, CZ (Ceska Zbrojovka), Sig Sauer, Stoeger Arms, Keltec, and Kahr Arms. Item 2 was fired in a third firearm. Item 2 is consistent with a bullet from ammunition designated 9mm Luger. A list of makes of firearms which are common to the [Laboratory] region and may have fired this item includes, but is not limited to: Smith & Wesson, Sig Sauer, Jimenez Arms, Hi-Point Firearms, Star, Bryco Arms, AA Arms Inc., Intratec, Helwan, and Astra.
NDRLK3	The bullets in items 1, 2, 3 and 4, were compared under microscope. For Items 1 and 2, significant disagreement was observed in discernible class characteristics, specifically in land mark width. Item 2 is eliminated from having been fired through the same barrel as the items1. For items 1 and 3, significant agreement was observed in individual characteristics and all discernible class characteristics. Item 3 is identified as having been fired through the same barrel as the items 1. For items 1 and 4, significant disagreement was observed in individual characteristics. Item 4 is eliminated from having been fired through the same barrel as the items1. For items 1 and 5, significant disagreement was observed in individual characteristics. Item 5 is eliminated from having been fired through the same barrel as the items1. For items # 4 and Item #5, significant agreement was observed in individual characteristics and all

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	discernible class characteristics. Item #4 is identified as having been fired through the same barrel as the items #5.
NFD7Q7	A. The bullets marked E-1 through E-3 (Item 1) and the bullet marked E-5 (Item 3), corresponding to Item 1, are 9 mm caliber, with right-hand rifling (R-6), and were fired from the same firearm (identification). B. The bullet marked E-6 (Item 4) and the bullet marked E-7 (Item 5), corresponding to Item 1, are 9 mm caliber, with right-hand rifling (R-6), and were fired from the same firearm (identification). C. The bullet marked E-4 (Item 2), corresponding to Item 1, is 9 mm caliber, with right-hand rifling (R-6), and was fired from a firearm; it was not fired from the firearm used to fire the bullets marked E-1 through E-3 (Item 1) and E-5 (Item 3), nor from the firearm used to fire the bullets marked E-6 (Item 4) and E-7 (Item 5) (elimination).
NFNAV6	Item 001-1 consists of three PMC brand, 9mm Luger caliber, 115 grain FMJ bullets reportedly test fired from a Sig Sauer P365 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 9mm Luger caliber fired bullet. I microscopically compared the four fired bullets from the scene to one of the bullets test fired from the Sig Sauer firearm. I observed agreement of all discernable class characteristics and sufficient agreement of individual characteristics to conclude that Item 001-3 was fired in the Sig Sauer firearm. I observed significant disagreement of class characteristics to conclude that Items 001-2 001-4, and 001-5 were not fired in the Sig Sauer firearm. I microscopically intercompared Items 001-2, 001-4, and 001-5. I observed significant agreement of all discernable class characteristics and sufficient agreement of individual characteristics to conclude that Items 001-4 and 001-5 were fired in the same firearm. I observed significant disagreement of class characteristics to conclude that Item 001-2 was not fired in the same firearm responsible for firing Items 001-4 and 001-5.
NFTPCP	Item 1 and 3 discharged from the same firearm Item 4 and 5 discharged from the same firearm (not the known test-fired bullets (Item 1)) item 2 is discharged from different firearm (not the known test-fired bullets (Item 1))
NJR29P	In my opinion there was significant agreement in the fine striae across multiple land impressions of the test fires in item 1 and the unknown item 3. In my opinion item 3 was fired from the seized firearm.
NMDKDT	One questioned bullet (Item 3) was fired from the same firearm as Item 1. Two questioned bullets (Items 4 and 5) were fired from the same firearm; however, they were not fired from the firearm as Item 1. One questioned bullet (Item 2) was not fired in the same firearms as Items 1, 3, 4, and 5.
NPHBHM	The four discharged bullets marked #2 through #5 were compared microscopically against each other and the test bullets marked #1. The bullet marked #3 was identified as having been discharged from the same firearm as the test bullets marked #1. The bullets marked #2, #4, and #5 were eliminated as having been discharged from the same firearm as the test bullets marked #1. The bullets marked #4 and #5 were identified as having been discharged from the same firearm. The bullet marked #2 was eliminated as having been discharged from the same firearm as the bullets marked #4 and #5.
NRJHE8	Microscopic examination and comparison reveal that the bullets, Items 1.A and 1.C, were fired from the same firearm based on agreement of class and individual characteristics. Microscopic examination and comparison of the bullets, Items 1.D and 1.E, reveal that they were fired from the same firearm based on agreement of class and individual characteristics, and are consistent with being fired from Canik, FN/Browning, Remington, Ruger, SAR Arms, Sig Sauer, Springfield Armory, and Taurus 9mm pistols. This list is provided only as an investigative lead and is not intended to be an all-inclusive list. Microscopic examination and comparison reveal

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	that the bullets, Items 1.D and 1.E, were not fired from the same firearm as the bullets, Items 1.A and 1.C based on disagreement of individual characteristics. Microscopic examination and comparison reveal that the bullet, Item 1.B, was not fired from the same firearm as the bullets, Items 1.A and 1.C based on disagreement of class characteristics. Microscopic examination and comparison reveal that the bullet, Item 1.B, was not fired from the same firearm as the bullets, Items 1.D and 1.E based on disagreement of class characteristics. Microscopic examination of the bullet, Item 1.B, reveals that it is consistent with being fired from Astra, Bryco Arms, Intratec, Lorcin and Sig Arms 9mm pistols. This list is provided only as an investigative lead and is not intended to be an all-inclusive list.
NTE2G9	Items 2, 3, 4, and 5 (bullets) were microscopically compared to Item 1 (test fired bullets). Based on agreement of discernable class characteristics and sufficient corresponding individual barrel markings observed, Item 3 (bullet) was identified as having been fired from the same firearm as Item 1 (test fired bullets). Because of the differences observed in the class or individual characteristics, Item 2, 4, and 5 (bullets) were eliminated as having been fired from the same firearm as Item 1 (test fired bullets).
NY9YB6	The following item contained sufficient microscopic individual characteristics and was identified as having been fired in item F2-A-1 (9mm Luger caliber/Sig Sauer/model P365/unknown serial number). Item F2-A-3: (1) fired bullet The following item contained different class characteristics than item F2-A-1 (9mm Luger caliber/Sig Sauer/model P365/unknown serial number) and was eliminated as having been fired in this firearm. Item F2-A-2: (1) fired bullet The following items contained sufficient but different microscopic individual characteristics and were eliminated as having been fired in item F2-A-1 (9mm Luger caliber/Sig Sauer/model P365/unknown serial number). Item F2-A-4: (1) fired bullet Item F2-A-5: (1) fired bullet 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-4: (1) fired bullet Item F2-A-5: (1) fired bullet
P63KA6	Exhibit 3 (spent projectile) was identified as having been fired in the same 9mm firearm that fired exhibit 1 (known test-fired projectiles). Exhibits 4 and 5 (spent projectiles) 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 analysis. Exhibit 2 (spent projectile) 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 analysis.
PFNMZP	The Item 2 projectile had disagreement of class characteristics with the Item 1 test fired projectiles and the Items 3 through 5 projectiles. In the opinion of the examiner Item 2 was not fired in the firearm(s) which fired Items 1, 3, 4, and 5. The Item 3 projectile was microscopically compared with the Item 1 test fired projectiles and determined to have similar class characteristics and sufficient agreement of individual characteristics for an identification. In the opinion of the examiner Item 3 was fired in the same firearm which fired the Item 1 test fired projectiles. The Item 4 and Item 5 projectiles 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 4 and Item 5 were fired in the same firearm. The Item 4 and Item 5 projectiles were microscopically compared with the Item 1 and Item 3 projectiles and determined to have disagreement of class and individual characteristics. In the opinion of the examiner Item 4 and Item 5 were not fired in the same firearm which fired the Item 1 test fired projectiles and the Item 3 projectile.
PFPKBL	Bullet identified as Item 3, has been fired by same gun that fired bullets identified as Item 1. Bullets identified as Item 2, Item 4, Item 5, have not been fired by same gun that fired bullets

TABLE 2

WebCode	Conclusions
	identified as Item 1.
PLAJKT	Items 1 through 5, each consistent in design with a 9mm Luger bullet, were microscopically examined. The Item 1 and 3 bullets were identified as having been fired from the same firearm based on corresponding class and individual characteristics. The Item 4 and 5 bullets were identified as having been fired from the same firearm based on corresponding class and individual characteristics. The Item 1 and 3 bullets were eliminated as having been fired from the same firearm as the Item 4 and 5 bullets based on sufficient differences in individual characteristics. The Item 2 bullet was eliminated as having been fired from the same firearm as the Item 1 and 3 bullets and from the same firearm as the Item 4 and 5 bullets based on a difference in class characteristics. Firearms that produce general rifling class characteristics like those present on the Item 2, 4, and 5 bullets are too numerous to list.
PQRHJU	Upon conducting the comparative examination between the reference bullets and items 2, 3, 4, and 5, it is concluded that only item 3 exhibits an identity relationship with the reference bullets; in other words, items 1 and 3 are identified as matching.
PZPKDD	The Items 01-01 and 01-03 bullets were identified as having been fired from the same firearm, which is reportedly a Sig Sauer Model P365 firearm. The Item 01-02 bullet was eliminated as having been fired from the same firearm(s) as the Items 01-01, 01-03, 01-04, or 01-05 bullets. The Item 01-02 bullet is consistent with 38 caliber class and was fired from a firearm having six conventionally rifled lands and grooves with a right twist. A possible caliber within this class includes, but is not limited to, 9mm Luger. A possible manufacturer of the firearm was not determined. The Items 01-04 and 01-05 bullets were eliminated as having been fired from the same firearm as the Item 01-01 bullets. The Items 01-04 and 01-05 bullets were identified as having been fired in the same firearm. The Items 01-04 and 01-05 bullets are consistent with 38 caliber class and were fired from a firearm having six conventionally rifled lands and grooves with a right twist. A possible caliber within this class includes, but is not limited to, 9mm Luger. A possible manufacturer of the firearm was not determined.
Q2KLZU	The examination of the recovered bullets under a comparison microscope, allows us to conclude that the item 3 was fired form the suspect's firearm. The examination also showed that items 4 and 5 were fired from a second firearm. Item 2 was fired from a third one.
Q69X2K	The item 3 was fired by the same firearm as the item 1. The items 2, 4, 5 were not fired by the same firearm as the item 1.
Q6FGFA	As a result of microscopic comparison, it was concluded: Item 3 was identified as having been fired from the same firearm that fired Item 1. Item 4 and Item 5 were identified as having been fired from the same unknown firearm. Item 4 and Item 5 were eliminated as having been fired from the same firearm that fired Item 1 and Item 3 based on significant disagreement of individual characteristics. Item 2 was eliminated as having been fired from the same firearm that fired Item 1 and Item 3 or Item 4 and Item 5 based on significant disagreement of discernible class characteristics.
Q8CTKM	Compared test bullets from the (item # 1) Sig Sauer pistol against the bullet marked #3 with positive results. The bullet marked #3 was identified as having been discharged from the (item#1) Sig Sauer pistol. Compared test bullets from the (item #1) Sig Sauer pistol against the three bullets marked #2, #4 and#5 with negative results. The three bullets marked #2, #4 and #5 were eliminated as having been discharged from the (item #1) Sig Sauer pistol. Compared the two bullets marked #4 and #5 against each other with positive results. The two bullets marked #4 and #5 were identified as having been discharged from the same firearm.
Q9GHGR	The three known test-fired bullets discharged from the suspect's firearm (Item 01-01) were

TABLE 2

WebCode	Conclusions
	identified as having been fired from a single firearm, reportedly a Sig Sauer P365 firearm. One questioned recovered bullet (Item 01-02) was eliminated as having been fired from the same firearm(s) as the known test-fired bullets (Item 01-01) and remaining questioned recovered bullets (Items 01-03, 01-04, and 01-05). The bullet is consistent with 38 caliber class and having six conventional lands and grooves with a right twist. The manufacturer of the firearm that fired the bullet is unknown. One questioned recovered bullet (Item 01-03) was identified as having been fired from the same firearm as the known test-fired bullets (Item 01-01). Two questioned recovered bullets (Items 01-04 and 01-05) could neither be identified nor eliminated as having been fired from the same firearm as the known test-fired bullets (Item 01-01). There is agreement of all discernible class characteristics and disagreement of individual characteristics, but insufficient for an elimination. The two bullets were, however, identified as having been fired from a single firearm consistent with 38 caliber class and having six conventional lands and grooves with a right twist. The manufacturer of the firearm that fired the bullets is unknown.
Q9GK8V	Item 1C (Item 3 fired metal jacketed bullet) is identified as having been fired from the same firearm as Items 1A1 and 1A2 (fired metal jacketed bullets). Items 1D and 1E (Items 4 and 5 fired metal jacketed bullets) are identified as having been fired from the same firearm. Item 1B (Item 2 fired metal jacketed bullet) is eliminated as having been fired from the same firearm(s) as Items 1A1, 1A2, 1C, 1D, and 1E (fired metal jacketed bullets). There are differences in class characteristics (land and groove widths). Items 1D and 1E (fired metal jacketed bullets) are inconclusive as having been fired from the same firearm as Items 1A1, 1A2, and 1C (fired metal jacketed bullets). These items share agreement of class characteristics with some agreement of the individual characteristics observed in the land impressions. The agreement observed is insufficient for an identification.
QBXCQR	Group 1: The Item 3 bullet was identified as having been fired from the same barrel that fired the Item 1 bullets, which is rifled with six grooves, right twist. Group 2: The Item 4 and Item 5 bullets were identified as having been fired from the same barrel, which is rifled with six grooves, right twist. A pattern examination of the Group 1 and Group 2 bullets was inconclusive due to insufficient quality and/or quantity of corresponding individual characteristics. The Item 2 bullet was excluded (discernible general rifling characteristics) as having been fired from the barrels that fired the Group 1 and Group 2 bullets.
QCFV3V	Results: Digital 3D images of Items 1A1, 1A2, 1A3, 1B, 1C, 1D, and 1E (fired bullets) were compared using virtual comparison microscopy. Items 1A1, 1A2, 1A3, and 1C (fired bullets) are identified as having been fired from the same firearm. Items 1D and 1E (fired bullets) are identified as having been fired from the same firearm. Item 1B (fired bullet) is eliminated as having been fired from the same firearm(s) as Items 1A1, 1A2, 1A3, 1C, 1D, and 1E (fired bullets). There are differences in class characteristics (land and groove impression widths). Items 1A1, 1A2, 1A3, and 1C (fired bullets) are eliminated as having been fired from the same firearm as Items 1D and 1E (fired bullets). There are differences in individual characteristics (striations in the land impressions). Items 1B, 1D, and 1E are consistent with being .38/9mm caliber class fired metal jacketed bullets displaying conventional rifling specifications of six lands and grooves with a right twist. Database Entry: Items 1A1, 1A2, 1A3, 1B, 1C, 1D, and 1E (fired bullets) were entered into the [Laboratory] EvoFinder database. These entries will be used in future database searches by [Laboratory] Forensic Science Division and will remain in the database unless a request to remove the entries is received. Any future identifications made to these items will be provided in a supplemental report. Conclusion Scale for Microscopic Comparisons: The following descriptions are meant to provide context to the levels of opinions reached in this report. Identification: This is the strongest statement of association that can be

TABLE 2

WebCode	Conclusions
	expressed. An identification is made when there is agreement of all discernible class characteristics and sufficient agreement of the individual characteristics of toolmarks. When sufficient agreement exists, in part, this means the likelihood of another tool producing the same marks is so remote it is considered a practical impossibility. Elimination: This is the strongest statement of non-association that can be expressed. An elimination is made when one of the following is true: It is a physical impossibility (i.e., there is a clear demonstrative incompatibility in class characteristics) for the items to have been marked by the same tool/fired in the same firearm. Demonstrative differences in the subclass or reproducible individual characteristics. Inconclusive: An inconclusive is made when one of the following situations is true. Agreement of all discernible class characteristics and some agreement of individual characteristics, but insufficient for identification. Agreement of all discernible class characteristics without agreement or disagreement of individual characteristics due to an absence, insufficiency, or lack of reproducibility. Agreement of all discernible class characteristics and some disagreement of individual characteristics but insufficient for elimination. Agreement of all discernible class characteristics and disagreement of individual characteristics, however reproducibility or variability of individual characteristics cannot be established. Agreement of all discernible class and subclass characteristics. The individuality of the characteristics is not discernible; therefore, the items may have been fired from the same firearm or from another firearm that was machined with the same tool in the approximate same state of wear. Unsuitable: An item is considered unsuitable for comparison when it does not bear any class, subclass, and/or individual toolmarks of value for microscopic comparison.
QED6GK	The Sig Sauer P365 firearm seized (rounds submitted as Item 1) fired the questioned bullet submitted as Item 3. - The Sig Sauer P365 firearm seized (rounds submitted as Item 1) did not fire the questioned bullets submitted as Item 2, 4 and 5.
QG9X4A	The 38 caliber class bullet (Item 3) was fired from the same firearm as the test fired bullets (Item 1). The 38 caliber class bullets (Items 4 and 5) were fired from a second firearm. The remaining 38 caliber class bullet (Item 2) was fired from a third firearm.
QP36MF	1. Examination of Exhibit 1 revealed three fired 9mm Luger bullets identified as test standards from a suspect weapon. All three are suitable for comparison. 2. Examination of Exhibits 2, 3, 4, and 5 revealed each contains one fired .38 caliber class bullet normally loaded in a 9mm Luger cartridge, all of which are suitable for comparison. a. Microscopic comparison revealed Exhibit 3 was fired from the same firearm as Exhibit 1 due to sufficient agreement of individual characteristics. b. Microscopic comparison revealed Exhibits 4 and 5 were fired from the same firearm due to sufficient agreement of individual characteristics; however, they were not fired from the same firearm as Exhibit 1 due to sufficient disagreement of individual characteristics. c. Microscopic comparison revealed Exhibit 2 was not fired from the same firearm as Exhibit 1 and 3 or Exhibit 4 and 5 due to disagreement of class characteristics. 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.
QP4ZBR	Identification - Agreement of class and individual characteristics were observed. It is the opinion of the examiner that the observed toolmarks were created by the same tool.

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	Elimination - Disagreement of class characteristics and/or individual characteristics were observed. It is the opinion of the examiner that the observed toolmarks were not created by the same tool. Item #3 (fired bullet) compared to Item #1 (test fired bullets from firearm) - Identification Item #4 (fired bullet) compared to Item #5 (fired bullet) - Identification Item #2 (fired bullet) compared to Items #1, 3, 4, & 5 (firearm components) - Elimination
QUK3GX	A test fired bullet from Item 1 was microscopically examined and compared with a recovered fired bullet, Item 2. Based on the observed disagreement of their class characteristics, Item 2 is eliminated as having been fired from the same firearm as Item 1. A test fired bullet from Item 1 was microscopically examined and compared with a recovered fired bullet, Item 3. Based on the observed agreement of their class characteristics and sufficient agreement of their individual characteristics, Item 3 is identified as having been fired from the same firearm as Item 1. The test fired bullets from Item 1 were microscopically examined and compared with recovered fired bullets, Items 4 and 5. There is observed agreement of some class characteristics. However, based on observed disagreement of individual characteristics, Items 4 and 5 were not identified as having been fired from the same firearm as Item 1.
QUK9UL	Item 3 was identified as having been fired from the same firearm that fired Item 1 based on significant agreement of class and individual characteristics. Items 4 and 5 were identified as having been fired from the same unknown firearm based on significant agreement of class and individual characteristics. Item 2 was eliminated as having been fired from the same firearms that fired Items 1, 4, and 5 based on significant disagreement of class characteristics.
QWTG8P	The 001-02 through 001-05 fired bullets were examined and microscopically compared to the 001-01 test fired bullets with the following results: -The 001-02 fired bullet was eliminated as having been fired through the barrel of the same firearm as the 001-01 test fired bullets. -The 001-03 fired bullet was identified as having been fired through the barrel of the same firearm as the 001-01 test fired bullets. - The 001-04 fired bullet was eliminated as having been fired through the barrel of the same firearm as the 001-01 test fired bullets. - The 001-05 fired bullet was eliminated as having been fired through the barrel of the same firearm as the 001-01 test fired bullets.
R2DZFK	Item 3 was identified as having been fired from the firearm associated with Item 1. The identification was confirmed by another qualified examiner. Items 4 and 5 were identified as having been fired from the same firearm as each other and were eliminated from having been fired from the firearm associated with Item 1. The identifications and eliminations were confirmed by another qualified examiner. Based on differences in class characteristics, Item 2 was eliminated from having been fired from the firearm associated with Item 1 and the firearm associated with Items 4 and 5.
R6CBBK	Three firearms are most likely responsible for firing the seven bullets received. Item 1 and Item 3 were identified as sharing a common source; reportedly a 9mm Luger caliber Sig Sauer, model P365, pistol. Items 4 & 5 were identified as sharing a common source, excluding the Sig Sauer pistol responsible for Items 1 & 3. Item 2 does not share a common source with any of the submitted projectiles. NOTE: Identification is the strongest level of positive association, based on sufficient agreement, of individual characteristics, observed within a combination of toolmarks from various working surfaces.
RAUCXR	The Item 3 fired bullet was fired from the same firearm that fired Item 1. This identification is based on sufficient agreement of the combination of individual characteristics and all discernible class characteristics. The Items 4 and 5 fired bullets were fired from the same unknown firearm. This identification is based on sufficient agreement of the combination of individual characteristics and all discernible class characteristics. The Item 2 fired bullet was not

TABLE 2

WebCode	Conclusions
	fired from the same firearm that fired Item 1 or from the same unknown firearm that fired Items 4 and 5. These eliminations are based on differences in class characteristics. The Items 4 and 5 fired bullets were not fired from the same firearm that fired Item 1. These eliminations are based on differences in individual characteristics. Item 2 is a 38 caliber family fired bullet having six conventional land and groove impressions with a right hand twist. Item 2 is consistent with being originally loaded in a 9mm Luger cartridge. An Association of Firearm and Tool Mark Examiners (AFTE) General Rifling Characteristics Database search of possible firearms that could have fired Item 2 is attached. Item 4 is a 38 caliber family fired bullet having six conventional land and groove impressions with a right hand twist. Item 4 is consistent with being originally loaded in a 9mm Luger cartridge. An Association of Firearm and Tool Mark Examiners (AFTE) General Rifling Characteristics Database search of possible firearms that could have fired Item 4 is attached. Since Items 4 and 5 were identified as having been fired from the same firearm, only Item 4 was used to perform the AFTE General Rifling Characteristics search. Note: The attached GRC searches may not be all-inclusive; any recovered firearms of the appropriate caliber class may be submitted to the laboratory for comparison purposes.
RGY9NH	A) The bullets marked E-1 to E-3 (Item 1) and the bullet marked E-5 (Item 3), corresponding to piece 1, are 9mm caliber with rifling to the right (R-6) and were fired by the same firearm (Identification). B) The bullet marked E-6 (Item 4) and the bullet marked E-7 (Item 5), corresponding to piece 1, are 9mm caliber with rifling to the right (R-6) and were fired by the same firearm (Identification). C) The bullet marked E-4 (Item 2) corresponding to piece 1, is 9mm caliber with rifling to the right (R-6), was fired by a firearm and was not fired by the firearms used to fire the bullets marked E-1 to E-3 (Item 1) and the bullets marked E-5 to E-7 (Item 3 to Item 5) corresponding to piece 1 (Elimination).
RHR3N8	The SIG SAUER P365 type firearm if it fires the bullet identified as item #3 and does not fire the bullets identified as items #2, #4, and 5.
RKVUFK	Items number 1 and 3 were fired from the same firearm
RQE3WQ	Identification - Agreement of class and individual characteristics were observed. It is the opinion of the examiner that the observed toolmarks were created by the same tool. Elimination - Disagreement of class characteristics and/or individual characteristics were observed. It is the opinion of the examiner that the observed toolmarks were not created by the same tool. Item #3 (fired bullet) compared to Item #1 (test fired bullets from firearm) - Identification Item #4 (fired bullet) compared to Item #5 (fired bullet) - Identification Items #4 & 5 (fired bullets) compared to Item #1 (test fired bullets from firearm) - Elimination Item #2 (fired bullet) compared to Items #1, 4 & 5 (fired bullets) - Elimination
RRE33V	The bullet evidence Q2 (Item 3) was identified as having been fired with the SIG Sauer P365 9mm Luger K1 (Item 1) firearm. The bullet evidence Q3 (Item 4) and Q4 (Item 5) were identified as having been fired with the same unknown firearm. The bullet evidence Q1 (Item 2) was excluded as having been fired with the SIG Sauer P365 9mm Luger K1 (Item 1) firearm based on sufficient disagreement of land and groove impression widths. The bullet evidence Q3 (Item 4) and Q4 (Item 5) were excluded as having been fired with the SIG Sauer P365 9mm Luger K1 (Item 1) firearm based on sufficient disagreement of individual characteristics. The bullet evidence Q1 (Item 2) was excluded as having been fired with the same firearm(s) as the bullet evidence Q3 (Item 4) and Q4 (Item 5) based on sufficient disagreement of land and groove impression widths.
RU7W2L	A microscopic comparison was conducted between the known test-fired bullets (item1) and the questioned recovered bullets (items2-5). Item 3 exhibited sufficient matching marks to conclude

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	that it was fired from the same firearms as item 1. whereas the other bullets (items 2, 4 and 5) had no sufficient individual characteristics to item 1, therefore it's concluded that they were not fired from the same firearm as item 1.
RVEC9R	Microscopic comparison of the test fired bullets in Item 1 with the bullets in Items 2 through 5 revealed the following: A) Based on agreement of all discernable class characteristics and sufficient agreement of individual characteristics, it was determined that the bullet in Item 3 had been fired through the barrel of the same firearm that fired the bullets in Item 1. B) Based on a disagreement of class characteristics, it was determined that the bullets in Items 2, 4, and 5 had not been fired through the barrel of the same firearm that fired the bullets in Item 1. C) Based on agreement of all discernable class characteristics and sufficient agreement of individual characteristics, it was determined that the bullets in Items 4 and 5 had been fired through the barrel of the same unknown firearm.
RVNFEP	The two bullets (Item 4, Item 5) were identified as being fired from the same firearm. The two bullets (Item 4, Item 5) are consistent with 9mm Luger caliber and were fired from a firearm with six conventionally rifled lands and grooves with a right twist. The bullet (Item 3) was identified as being fired from the 9mm Luger caliber Sig Sauer model P365 pistol (represented by item 1) and eliminated as being fired from the same firearm as the two bullets (Item 4, Item 5). The three bullets (Item 2, Item 4, Item 5) were eliminated as being fired from the 9mm Luger caliber Sig Sauer model P365 pistol (represented by item 1). The bullet (Item 2) was eliminated as being fired from the same firearm as the bullet (Item 3) and eliminated as being fired from the same firearm as the two bullets (Item 4, Item 5). The bullet (Item 2) is consistent with 9mm Luger caliber and was fired from a firearm with six conventionally rifled lands and grooves with a right twist. Possible firearms from which the two bullets (Item 4, Item 5) may have been fired from include, but are not limited to, 9mm Luger caliber firearms marketed by Heckler & Koch, Palmetto State Armory, Ruger, Sig Sauer, Springfield Armory, Tanfoglio, Taurus, and Walther among other firearms not commonly encountered in this laboratory. Any firearm suspected of involvement with this case should be submitted for comparison to the evidence. Possible firearms from which the bullet (Item 2) may have been fired from include, but are not limited to, 9mm Luger caliber firearms marketed by IMI, Intratec, Llama, Sig Sauer, Smith & Wesson, and Walther among other firearms not commonly encountered in this laboratory. Any firearm suspected of involvement with this case should be submitted for comparison to the evidence.
RXKU62	The bullet No. 3 where shot from the same weapon as the three expended cartridge bullets discharged from the suspect's weapon (No. 1). Bullets No. 4 and 5 where shot from the same weapon other than three expended cartridge bullets (No. 1). Bullet No 2 was fired from a different weapon than the three expended cartridge bullets (No. 1)
RYDM4R	The following items were submitted, packaged, and labeled as follows: Item 1: Three (3) reference projectiles (test fires) from a confiscated firearm: SIG SAUER P365, caliber 9mm Luger. Item 2: One (1) evidence projectile. Item 3: One (1) evidence projectile. Item 4: One (1) evidence projectile. Item 5: One (1) evidence projectile. The analysis of the projectiles established three distinct groups as follows: GROUP ONE: Item 1 vs. Item 3: Positive identification. These were fired from the same firearm. GROUP TWO: Item 4 vs. Item 5: Positive identification. These were fired from the same firearm. GROUP THREE: Item 2: Exhibits characteristics different from those in groups one and two. CONCLUSIONS: Items 1 and 3 exhibit individualizing characteristics of common origin, allowing for the conclusion that they were fired through the same firearm barrel, which is consistent with the confiscated SIG SAUER P365, caliber 9mm Luger. Items 4 and 5 exhibit individualizing characteristics of common origin, allowing for the conclusion that they were fired through the same firearm barrel;

TABLE 2

WebCode	Conclusions
	however, this barrel is different from that of the confiscated firearm. Item 2 exhibits individualizing characteristics that differ from those of groups one and two. Based on the points above, it can be concluded that three separate firearms were involved at the crime scenes.
T46AD7	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 4 and item 5. 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 4 and Item 5 are fired from same firearm.
T4PQT9	After microscopic comparison, it was determined that Case #25-5262, Items #3, 4, and 5, three (3) recovered spent projectiles, WERE FIRED from the subject Sig Sauer P365 firearm based on sufficient agreement of class and individual characteristics. There is sufficient quality and quantity of the consecutive matching striations for an identification. After microscopic examination, it was determined that Case #25-5262, Item #2, one (1) recovered spent projectile, WAS NOT FIRED from the Sig Sauer P3657 firearm based on disagreement of class characteristics. The subject spent projectile exhibits different class characteristics (land and groove measurements) than the known test-fires from the Sig Sauer P365.
T7LL4G	Bullet Analysis: Methodology: Physical (Visual Examination) Electronic Balance Caliper Digital Micrometer Microscopy (Comparison Microscope) Item 1A1, Item 1A2, Item 1A3, Item 1B, Item 1C, Item 1D and Item 1E are 38 caliber class bullets based upon the diameter. Item 1A1, Item 1A2, Item 1A3 and Item 1C were fired through the barrel of the same firearm based upon corresponding class and individual microscopic characteristics. Item 1D and Item 1E were fired through the barrel of the same firearm based upon corresponding class and individual microscopic characteristics. Item 1B was not fired through the barrel of the same firearm as Item 1A1, Item 1A2, Item 1A3 and Item 1C based upon different class characteristics. Item 1B was not fired through the barrel of the same firearm as Item 1D and Item 1E based upon different class characteristics. Item 1A1, Item 1A2, Item 1A3 and Item 1C were not fired through the barrel of the same firearm as Item 1D and Item 1E based upon different class and individual microscopic characteristics. Opinion/Interpretation: Item 1A1, Item 1A2, Item 1A3, Item 1B, Item 1C, Item 1D and Item 1E are consistent with bullets loaded in 9mm Luger caliber cartridges based upon the weight and style.
TADDLT	The Item 3 bullet is identified as having been fired in the same firearm as the Item 1 bullets. The Item 4 and 5 bullets 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 1 and 3 bullets. The Item 2 bullet is eliminated from having been fired in the same firearm as the Item 1 and 3 bullets and eliminated from having been fired in the same firearm as the Item 4 and 5 bullets.
TAPEZ2	Exhibit 3 (questioned recovered bullet) was identified as having been fired in the same firearm as exhibit 1 (test-fired bullets). Exhibits 4 and 5 (questioned recovered bullets) were identified as having been fired in a second 9mm firearm. The specific brand of suspect weapon is unknown at this time; however, any suspect weapon should be submitted for examination. Exhibit 2 (questioned recovered bullet) was fired in a third 9mm firearm. The specific brand of the suspect weapon is unknown at this time; however, any suspect weapon should be submitted for examination.
TCEJZY	The bullets/fragments, Lab Items 1 and 3, were identified as having been fired by the same firearm based on agreement of class characteristics and corresponding individual detail using microscopic comparison. The bullets/fragments, Lab Items 4 and 5, were identified as having

TABLE 2

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	been fired by the same firearm based on agreement of class characteristics and corresponding individual detail using microscopic comparison. The bullets/fragments, Lab Item 1 and 3, were eliminated from having been fired by the same firearm as Lab Items 4 and 5 based on disagreement of individual characteristics using microscopic comparison. The bullet/fragment, Lab Item 2, was eliminated from having been fired by the same firearms as Lab Items 1 and 3 or 4 and 5 based on disagreement of class characteristics using microscopic comparison.
TCYE78	Examination of Items #2, 3, 4 and 5 revealed them to be nominal .38 caliber classification full metal jacketed bullets that were fired from a firearm(s) that has conventional rifling consisting of six lands and grooves, right twist. These four bullets are consistent with bullets commonly loaded in 9mm Luger caliber cartridges and are deemed suitable for microscopic comparison purposes. Examination of the test fired bullets, Item #1, revealed the seized Sig Sauer pistol is rifled with conventional rifling consisting of six land and grooves, right twist. Microscopic comparison of the Item 1 test fired bullets to Items 2, 3, 4 and 5 revealed the following: Item 3 was identified as having been fired from the same firearm as Item 1 due to the agreement of all discernible class characteristics and sufficient agreement of individual characteristics. Items 2, 4 and 5 are eliminated as having been fired from the same firearm as Item 1 based on differences in class characterisics (widths of rifling). Additional microscopic comparisons were conducted revealing the following: Item 4 and Item 5 were identified as having been fired from the same unknown firearm(1) due to the agreement of all discernible class characteristics and sufficient agreement of individual characteristics. Item 2 is eliminated as having been fired from unknown firearm(1) based on differences in class characteristics (widths of rifling) and thus represents a second unknown firearm. In summary, this evidence represents bullets fired from three firearms.
TLKK2P	Item 3 matches Item 1, which corresponds to the patterns obtained from the SIG SAUER P365 firearm. Items 4 and 5 match each other. Item 2 does not match any other item. There are 3 firearms in total.
TMDDTP	EVIDENCE SUBMITTED Lab Item # Agency Item # Description 1 F2 One (1) cardboard box containing: 1.1 F2 Three (3) testfired bullets from Sig Sauer model P365. 1.2 F2 One (1) fired bullet. 1.3 F2 One (1) fired bullet. 1.4 F2 One (1) fired bullet. 1.5 F2 One (1) fired bullet. CONCLUSIONS OF ANALYSIS The one (1) fired bullet, item 1.2, was eliminated as having been fired in the Sig Sauer pistol, item 1.1, based on a difference in class characteristics (widths of lands and grooves). The one (1) fired bullet, item 1.3, was identified as having been fired in the Sig Sauer pistol, item 1.1, based on the agreement of all discernable class characteristics and agreement of corresponding individual microscopic markings. The two (2) fired bullets, items 1.4, and 1.5, were consistent in all observable class characteristics (caliber, number of lands and grooves, rifling, twist, and widths of lands and grooves) as the Sig Sauer pistol, item 1.1. While there is some disagreement of microscopic markings, the markings present are insufficient for an elimination. The results are inconclusive. The two (2) fired bullets, items 1.4, and 1.5, were each eliminated as having been fired in the same firearm as item 1.2, based on a difference in class characteristics (widths of lands and grooves). The two (2) fired bullets, item 1.4 and 1.5, were 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. [Participant submitted data in a format that could not be reproduced in this report.]
TVB77N	Item 3 was fired in the SIG Sauer P365 pistol seized by police. Item 2 was fired in a second gun. Items 4 and 5 were fired in a third gun.
TZPJAV	Item 3 was discharged from the suspects pistol item 1. Item 4 and Item 5 were discharged from

TABLE 2

WebCode	Conclusions
	the same pistol, different from suspects firearm. Item 2 was discharged from the other pistol.
U3GAM8	The fired bullets 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 bullets in Submissions 1d and 1e were microscopically compared and identified as having been fired from the same unknown firearm based on sufficient agreement in individual characteristics present to conclude an identification. The fired bullets in Submissions 1a and 1c were microscopically compared to the bullets in Submissions 1d and 1e and eliminated as having been fired from the same unknown firearm based on sufficient difference in individual characteristics present. The fired bullet in Submission 1b was microscopically compared to the bullets in Submissions 1a, 1c, 1d and 1e and eliminated as having been fired from the same unknown firearm based on different class characteristics present.
U7PKKA	Item 1 was microscopically compared to fired bullet, Item 3 and an identification was made. Item 1 and Item 3 were fired from the same firearm., from firearm Sig Sauer P365. Item 4 was microscopically compared to fired bullet, Item 5 and an identification was made. Item 4 and Item 5 were fired from the same firearm, not submitted. Item 2 was eliminated as having been fired from the same firearm as fired bullets, Items 1 & 3 and Items 4 & 5 due to differences in class characteristics. Eliminated due to differences in LAG dimension.
U8QTJF	Within the limits of practical certainty, Item 3 was identified as having been fired through the barrel of the exhibit Sig Saur P365 firearm. Items 2, Item 4 and Item 5 were all eliminated from having been fired through the barrel of the exhibit Sig Saur P365 firearm.
UAGUMH	The cartridge cases were compared to each other 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 the cartridge case, CTS Item 3, was fired in the same firearm that made the test-fires, CTS Item 1. Based on the examination, it is my opinion that there was significant disagreement of discernible class characteristics and/or individual characteristics to conclude that the cartridge cases, CTS Items 2, 4, and 5, were not fired in the firearm that made the test-fires, CTS Item 1.
UB6VZY	One of the test fired projectiles (item 1) was compared to item 2, item 3, item 4, and item 5. Based on the agreement of individual characteristics and all discernible class characteristics, it was determined that only item 3 was fired out of the Sig Sauer pistol (item 1). (Identification). The remaining three projectiles (items 2,4, and 5) were eliminated from being fired out of the Sig Sauer pistol due to differing class and individual characteristics. (Elimination). Item 2 was compared to item 4 and item 5. Based on differing class characteristics, it was found to be eliminated as being fired out of the same firearm. (Elimination). Item 4 and item 5 were compared to each other. Based on the agreement of individual characteristics and all discernible class characteristics, it was determined that item 4 and item 5 were fired out of the same firearm. (Identification).
UCLG38	The Item 01-01A, 01-01B, 01-01C, and 01-03 fired bullets were all identified as having been fired from the same firearm, reportedly a SIG Sauer model P365 pistol. The Item 01-04 and 01-05 fired bullets were identified as having been fired from the same unknown firearm. The Item 01-01 and 01-03 fired bullets were eliminated as having fired from the same firearm as Items 01-04 and 01-05 due to differences in class and individual characteristics. The Item 01-02 fired bullet was eliminated as having been fired from the same firearm as Items 01-01, 01-03, 01-04, and 01-05 due to differences in class characteristics.
ULB8ME	The test fired bullets from the exhibit pistol (knowns) were identified to the unknown bullet - Item 3. The other bullets were eliminated.

TABLE 2

WebCode	Conclusions
ULURWR	RESULTS: PROJECTILES Items 1 and 3 The Item 3 bullet was Identified to Item 1. The Item 1 and 3 bullets were Eliminated to the Item 4 and 5 bullets. Item 2 The bullet was Eliminated to the Item 1, 3, 4 and 5 bullets, based on a difference in class characteristics. The bullet has design features consistent with bullets loaded in 9mm Luger caliber cartridges. There are numerous manufacturers of firearms with similar rifling characteristics. Items 4 and 5 The bullets were Identified to each other. The bullets have design features consistent with bullets loaded in 9mm Luger caliber cartridges. There are numerous manufacturers of firearms with similar rifling characteristics. [Participant submitted data in a format that could not be reproduced in this report.]
UMVKZ6	Microscopic examination and comparison reveal that the bullet, Item 3, was fired from the same firearm as the bullets, Item 1, based on agreement of class and individual characteristics. Microscopic examination and comparison reveal that the bullets, Items 2, 4, and 5, were not fired from the same firearm as the bullets, item 1, based on a disagreement of class characteristics.
UPBJHE	I observed a difference in the rifling impression widths between the questioned bullet, item 2 and the bullets that had been test fired in the suspects firearm (item 1). Therefore in my opinion, item 2 had not been fired in the suspect's firearm. I observed a difference in the microscopic detail and a difference in the rifling impression widths between the questioned bullets, items 4 and 5 and the bullets that had been test fired in the suspects firearm (item 1). Therefore in my opinion, items 4 and 5 had not been fired in the suspect's firearm. I observed a correspondence of rifling impression widths, and a correspondence of striae in the land impression where present, and a very good correspondence of striae in some of the groove impressions, between the questioned bullet, item 3 and the bullets that had been test fired in the suspect's firearm (item 1). There were no unexplained differences observed between these items. Therefore, item 3 could have been fired in the suspect's firearm or in another firearm that shares these same features. In subjectively interpreting the significance of these findings I have considered the probability of obtaining these comparison findings given item 3 had been fired in the suspect's firearm. Conversely, I have also considered the probability of these findings given item 3 had been fired in another firearm. In my opinion, I would expect to observe these comparison findings if item 3 had been fired in the suspect's firearm. However, the best correspondence was observed in the groove impressions, which can be prone to subclass carryover. Therefore, in my opinion, the comparison findings provide very strong support for the proposition that the bullet (item 3) had been fired in the suspect's firearm as opposed to having been fired in another firearm. I have chosen the term "very strong support" from the following scale; neutral, slight support, moderate support, strong support, very strong support and extremely strong support. This scale can be used to indicate the level of support for either proposition.
UV2TTD	1. Examination of Exhibit 1 revealed three fired 9mm Luger bullets, identified as known test-fired bullets discharged from the suspect's firearm. All are suitable for comparison. 2. Examination of Exhibits 2, 3, 4 and 5 revealed that each contains one fired .38 caliber class bullet normally loaded in a 9mm Luger cartridge. All are suitable for comparison. 3. Microscopic comparison of Exhibits 1, 2, 3, 4 and 5 revealed the following. a. Exhibit 3 was fired from the same firearm as Exhibit 1 due to sufficient agreement of individual characteristics. b. Exhibits 4 and 5 were fired from the same firearm due to sufficient agreement of individual characteristics; however, they were not fired from the same firearm as Exhibit 1 due to sufficient disagreement of individual characteristics. c. Exhibit 2 was not fired from the same firearm as Exhibit 1 and 3 or Exhibit 4 and 5 due to disagreement of class characteristics. Technical Notes Class characteristics are defined as measurable features of a firearm/tool

TABLE 2

WebCode	Conclusions
	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.
UYQYXG	The fired bullet submitted as item #3 exhibits the same class and matching microscopic detail to all three of the test fired samples from #1. The agreement is very strong support that the two samples (#1 and #3) originated from the same firearm. The fired bullets submitted as items #4 and #5 exhibits the same class and matching microscopic detail to each other. The agreement is very strong support that the two samples (#4 and #5) originated from the same firearm. These samples do not match sample set #1 and represent a second different firearm from this set of samples. The fired bullet submitted as item #2 exhibits class characteristics that are different from all other submissions in this set of samples and is eliminated as having been fired in either firearm described above. This represents a third different firearm from this set of samples.
UZF483	Microscopic examination and comparison reveal that the bullets, Items 1.A and 1.C, were fired from the same firearm based on agreement of class and individual characteristics. Microscopic examination and comparison of the bullets, Items 1.D and 1.E, reveal that they were fired from the same firearm based on agreement of class and individual characteristics, and are consistent with being fired from Beretta, Canik, FN/Browning, Heckler and Koch, Keltec, Palmetto State Armory, Polymer80, Remington, Ruger, SAR Arms/Sarsilmaz, Sig Sauer, Springfield, and Taurus 9mm pistols. This list is provided only as an investigative lead and is not intended to be an all-inclusive list. Microscopic examination and comparison reveal that the bullet, Item 1.B, was not fired from the same firearm as the bullets, Items 1.A and 1.C based on disagreement of class characteristics. Microscopic examination and comparison reveal that the bullet, Item 1.B, was not fired from the same firearm as the bullets, Items 1.D and 1.E based on disagreement of class characteristics. Microscopic examination and comparison reveal that the bullets, Items 1.A and 1.C, were not fired from the same firearm as the bullets, Items 1.D and 1.E based on disagreement of individual characteristics. Microscopic examination of the bullet, Item 1.B, reveals that it is consistent with being fired from SIGArms and Sig Sauer 9mm pistols. This list is provided only as an investigative lead and is not intended to be an all-inclusive list.
UZVPG4	1-1 Three (3) known test-fired bullets discharged from the suspect's firearm. 1-2 Ammunition Questioned recovered bullet. 1-3 Ammunition Questioned recovered bullet. 1-4 Ammunition Questioned recovered bullet. 1-5 Ammunition Questioned recovered bullet. As a result of physical and microscopic examination of the test fires and recovered projectiles above it is my opinion that: A/ The projectile mentioned in item 1-3 above was fired from the pistol that created the test fires mentioned in item 1-1. Identification B/ The projectiles mentioned in items 1-4 and 1-5 above were fired from the same unknown weapon capable of firing .38 caliber class ammunition, not the same weapon(s) that produced items 1-1, 1-2, or 1-3. Identification C/ The projectile mentioned in item 1-2 above was fired from an unknown weapon capable of firing .38 caliber class ammunition, not the same weapon(s) that produced items 1-1, 1-3, 1-4, or 1-5 above. Exclusion
V3HMQT	Item 3 was identified as having been fired from the same 9mm caliber firearm which fired Item 1. Items 4 and 5 were identified as having been fired from the same unknown 9mm caliber

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	firearm. Items 4 and 5 were eliminated from having been fired from the same firearm which fired Items 1 and 3 based on significant differences in individual characteristics. Item 2 was eliminated from having been fired from the same firearm which fired Items 1 and 3 as well as the firearm which fired Items 4 and 5, by differences in class characteristics. Item 2 was fired from an unknown 9mm caliber firearm.
V63DV6	Item 1 and Items 2 through 5 were examined. Item 3 and Item 1 bullets were microscopically compared. Item 4 and Item 5 bullets were microscopically compared. Results: Item 3 and Item 1 exhibit patterns and markings that are consistent with each other. These items are not consistent with Item 2, Item 4 or Item 5 fired bullets. Items 4 and Item 5 exhibit patterns and markings that are consistent with each other. These items are not consistent with Item 2, Item 3 or Item 1 fired bullets. Item 2 does not exhibit patterns or markings similar to Items 1 through 4. Conclusions: Items 3,4,5 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 through the same firearm based on individual characteristics. As a result of microscopic comparison, it was concluded that Item 4 and Item 5 were identified as having been fired from the same (second) firearm based on individual characteristics. Item 2 was not fired from the same firearm as Items 1, 3,4, and 5 based on class characteristics.
V7GZ7R	The fired bullet of item #3 was microscopically identified as having been fired in the seized Sig Sauer firearm. The fired bullet of item #2 was microscopically eliminated from having been fired in the same firearm(s) as items #1, #4, and #5 due to differences in class and individual characteristics. This bullet was determined to have been fired from an unknown firearm. The fired bullets of items #4 and #5 were microscopically eliminated from having been fired in the seized Sig Sauer pistol due to differences in individual characteristics. These bullets were determined to have been fired from a second unknown firearm.
V8VAHE	[No Conclusions Reported.]
V8YPXX	There was sufficient agreement of class and individual characteristics to determine that the fired bullet, Item 3, had been fired in the same gun the bullets, Item 1. There was sufficient disagreement of class characteristics to determine that the fired bullet, Item 2 had not been fired in the same gun as the bullets, Item 1. There was some agreement of class characteristics but sufficient disagreement of individual characteristics to determined that the fired bullets, Items 4 and 5 had not been fired in the same gun as the bullets, Item 1.
V96EV3	Physical and microscopic examinations and comparisons were conducted of the above submitted evidence and the test firings. Based on those examinations and comparisons it is my opinion that: A/ The item 1-2 spent projectile was not fired by the submitted firearm but rather an unknown firearm capable of chambering and firing .38 caliber class ammunition. Due to a disagreement of class characteristics (land and groove impression width) this item was not compared to the others. EXCLUSION. B/ The item 1-3 spent projectile was fired by the submitted firearm. IDENTIFICATION. C/ The items 1-4 and 1-5 spent projectiles were fired by a second unknown firearm capable of chambering and firing .38 caliber class ammunition. IDENTIFICATION.
VBZTPK	Item 001-01 test fired bullets were microscopically examined in conjunction with the fired bullets in Items 001-02, 001-03, 001-04 and 001-05. Based on these comparative examinations it was determined that: A. Item 001-02 fired bullet was eliminated as having been fired through the same barrel item 001-01 test fired bullets due to rifling class differences. B. Item 001-03 fired bullet was identified as having been fired through the same barrel as Item 001-01 fired bullets. C. Item 001-04 and 001-05 fired bullets were eliminated as having been fired through the same barrel as Item 001-01 test fired bullets due to a vast

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WebCode	Conclusions
	difference in individual characteristics. D. Items 001-04 and 001-05 fired bullets were identified as having been fired through the same barrel.
VEQ86G	Bullet Analysis: Methodology: Physical (Visual examination) Electronic Balance Caliper Digital Micrometer Microscopy (Comparison Microscope) Item 1A1, Item 1A2, Item 1A3, Item 1B, Item 1C, Item 1D and Item 1E are 38 caliber class bullets based on the diameter. Item 1A1, Item 1A2, Item 1A3 and Item 1C were fired through the barrel of the same firearm based upon corresponding class and individual microscopic characteristics. Item 1D and Item 1E were fired through the barrel of the same firearm based upon corresponding class and individual microscopic characteristics. Item 1D and Item 1E were not fired through the barrel of the same firearm as Item 1A1, Item 1A2, Item 1A3 and Item 1C based upon different individual microscopic characteristics. Item 1B was not fired through the barrel of the same firearm as Item 1A1, Item 1A2, Item 1A3 and Item 1C based upon different class characteristics. Item 1B was not fired through the barrel of the same firearm as Item 1D and Item 1E based upon different class characteristics. Opinion/Interpretation: Item 1A1, Item 1A2, Item 1A3, Item 1B, Item 1C, Item 1D and Item 1E are consistent with bullets loaded in 9mm Luger caliber cartridges based upon the weight and style. Item 1B exhibits characteristics found in (but not limited to) the following firearms: Bryco Arms, Intratec, Jennings/Bryco, Jimenez Arms, Llama, SigSauer, Stallard Arms and Walther 9mm Luger caliber firearms. Item 1D and Item 1E exhibit characteristics found in (but not limited to) the following firearms: Beretta, Canik, CZ, Fabrique Nationale, Keltec, Ruger, Sarsilmaz, SigSauer, Springfield Inc, Tanfoglio, Taurus and Walther 9mm Luger caliber firearms.
VF9EDH	One questioned recovered bullet (Item 3) was discharged from the same firearm as the known test-fired bullets (Item 1). Three other questioned recovered bullets (Item 2, 4, 5) were NOT discharged from the same firearm as the known test-fired bullets (Item 1).
VJMTX6	The Exhibit 3 bullet was identified as having been fired from the same firearm as the Exhibit 1 purported test fires. The Exhibit 2, 4, and 5 bullets were excluded as having been fired from the same firearm as the Exhibit 1 purported test fires. The Exhibit 4 and 5 bullets were identified as having been fired from the same firearm. The Exhibit 2 bullet was excluded as having been fired from the same firearm as the Exhibit 4 and 5 bullets.
VMM6U6	The Exhibit 1 and 3 bullets were identified as having been fired from the same firearm. (Source identification) The Exhibit 2 bullet was excluded as having been fired from the same firearm as the Exhibit 1 bullets. (Source exclusion) The Exhibit 2 bullet was excluded as having been fired from the same firearm as the Exhibit 4 and 5 bullets. (Source exclusion) The Exhibit 4 and 5 bullets were identified as having been fired from the same firearm. (Source identification) The Exhibit 4 and 5 bullets were excluded as having been fired from the same firearm as the Exhibit 1 bullets. (Source exclusion)
VVKVKK	ITEM SUMMARY OF RESULTS AND INTERPRETATIONS 1.1-1.5 The expended bullets were originally components of 9mm class caliber cartridges that have been fired in a barrel with 6 lands and grooves of conventional style rifling with a right-hand twist. Test fires from the reported Sig Sauer P365 firearm (Item 1.1) were microscopically examined and compared to Item 1.3. 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 reported Sig Sauer P365 firearm. Items 1.4 and 1.5 were microscopically examined and compared. Based on the observed agreement of their class characteristics and sufficient agreement of their individual characteristics, Items 1.4 and 1.5 are identified as having been fired from the same unknown firearm. Items 1.1, 1.3-1.5 were microscopically examined and compared to Item 1.2. Based on the observed disagreement of class and individual

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	characteristics, Item 1.2 is eliminated as having been fired from the reported Sig Sauer P365 firearm and the unknown firearm. Item 1.2 was fired from a second unknown firearm.
VZPTLY	Exhibit 1.2 was eliminated as having been fired from 1.1 and from 1.3 through 1.5 based on differences in class characteristics. 1.3 was produced by the same suspect weapon which was used to produce the Exhibit 1.1 test fires based on sufficient agreement of individual characteristics observed. Exhibits 1.4 and 1.5 were fired by a third 9mm weapon based on agreement of individual characteristics observed. The class characteristics of 1.4 and 1.5 are similar to the weapon used to produce Exhibit 1.1.
W9Q9EP	Fired projectile Item 3 was identified as having been fired in the same firearm as test fired projectiles within Item 1 based on agreement of class characteristics and sufficient agreement of individual characteristics within the land impressions. Fired projectile Item 4 and Item 5 were identified as having been fired in the same firearm based on agreement of class characteristics and sufficient agreement of individual characteristics within the land impressions. Fired projectile Item 4 and Item 5 were eliminated from having been fired in the same firearm as test fired projectiles within Item 1 and fired projectile Item 3 based on agreement of class characteristics but significant disagreement of individual characteristics within the land impressions. Fired projectile Item 2 was eliminated from having been fired in the same firearm as fired projectile Item 3, Item 4, and Item 5 and from test fired projectiles within Item 1 based on a disagreement of class characteristics. Fired projectile Item 2 is consistent with 9mm Luger caliber. A list of possible firearms that could have fired Item 2 includes but is not limited to the following: Astra, Lorcin, Sig Arms, Jimenez Arms, Llama, Walther, and Smith & Wesson.
WHQXQL	Comparison Results: The Item 3 fired bullet was fired from same known firearm that fired the Item 1 test fired bullets, indicated by the submitting agency as being a Sig Sauer model P365. This identification is based on sufficient agreement of the combination of individual characteristics and all discernible class characteristics. The Item 2 fired bullet was not fired from the same known firearm that fired the Item 1 test fired bullets. This elimination is based on differences in class characteristics (land and groove impression widths). The Items 4 and 5 fired bullets were not fired from the same known firearm that fired the Item 1 test fired bullets. These eliminations are based on differences in individual characteristics. The Items 4 and 5 fired bullets were fired from same unknown firearm. This identification is based on sufficient agreement of the combination of individual characteristics and all discernible class characteristics. The Item 2 fired bullet was not fired from the same unknown firearm that fired Items 4 and 5. These eliminations are based on differences in class characteristics (land and groove impression widths). General Rifling Characteristics (GRC) Search Results: Item 2 is a 38 caliber family fired bullet having six conventional land and groove impressions with a right hand twist. Based on diameter, weight, and profile design, Item 2 is most consistent with being originally loaded in a 9mm Luger cartridge. An AFTE General Rifling Characteristics Database search of possible firearms that could have fired Item 2 is attached. Item 4 is a 38 caliber family fired bullet having six conventional land and groove impressions with a right hand twist. Based on diameter, weight, and profile design, Item 4 is most consistent with being originally loaded in a 9mm Luger cartridge. An AFTE General Rifling Characteristics Database search of possible firearms that could have fired Item 4 is attached. Since Items 4 and 5 were identified as being fired from the same unknown firearm, only Item 4 was used for the GRC search. Note: The attached GRC searches may not be all-inclusive; any recovered firearms of the appropriate caliber class may be submitted to the laboratory for comparison purposes.
WJWK4Q	The comparative microscopic examination of the projectile number 3 with the reference ammunition obtained from firing the SIG P365 pistol in question reveals a match in both the recognizable system characteristics and the individually characteristic firing traces. From a

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WebCode	Conclusions
	forensic perspective, this strongly suggests that the examined projectile number 3 was propelled through the barrel of the weapon in question (SIG P365). The existing traces on the projectiles (2-5) indicate that three weapons were used.
WQ22Y7	The Items 01-01 and 01-03 bullets were identified as having been fired from the same firearm. The Items 01-04 and 01-05 bullets were identified as having been fired from the same firearm. The Items 01-04 and 01-05 bullets were eliminated as having been fired from the same firearm as the Items 0-01 and 01-03 bullets. The Items 01-04 and 01-05 bullets are consistent with a 38 caliber class and was fired from a firearm having six conventional lands and grooves with a right twist. A possible caliber within this class includes, but is not limited to 9mm Luger. The manufacturer of the firearm that fired the Items 01-04 and 01-05 bullets is unknown, but could include commonly encountered models of 9mm Luger Beretta, FN/Browning, Canik, Ceska Zbrojovka (CZ), Heckler & Koch, Kahr Arms, Keltec, Polymer80, Remington, Ruger, Sarsilmaz (SAR Arms), Sig Sauer, Springfield Armory, Taurus, or Walther. The Item 01-02 bullet was eliminated as having been fired from the same firearm as the Items 01-01 and 01-03 bullets or the Items 01-04 and 01-05 bullets. The Item 01-02 bullet is consistent with a 38 caliber class and was fired from a firearm having six conventional lands and grooves with a right twist. A possible caliber within this class includes, but is not limited to 9mm Luger. The manufacturer of the firearm that fired the Item 01-02 bullet is unknown, but could include commonly encountered models of 9mm Luger Astra, Intratec, Jennings/Bryco Arms, Jimenez Arms, Llama, Lorcin, Sig Sauer, Smith & Wesson, and Walther.
WQ7GFQ	The hypothesis that bullets item 1 and item 3 were fired from the same firearm is very strongly supported.
WT4Z9D	The firearm that fired the Item 1 bullets was identified, within the limits of practical certainty1, as having fired the Item 3 bullet. The Item 4 and 5 bullets were identified, within the limits of practical certainty1, as having been fired from the same firearm, but not the firearm that fired the Item 1 bullets. The Item 2 bullet was not fired from the firearm that fired the Item 1 bullets or from the firearm that fired the Item 4 and 5 bullets. The Item 1 through 5 bullets represent 3 different firearms.
X2XRTC	Bullet Analysis: Methodology: Physical (Visual Examination) Electronic Balance Caliper Digital Micrometer Microscopy (Comparison Microscope) Item 1A, Item 1B, Item 1C, Item 1D, Item 1E, Item 1F and Item 1G are 38 caliber class bullets based upon the diameter. Items 1A, 1B, 1C and 1E were fired through the barrel of the same firearm based upon corresponding class and individual microscopic characteristics. Items 1F and 1G were fired through the barrel of the same firearm based upon corresponding class and individual microscopic characteristics. Item 1D was not fired through the barrel of the same firearm as Items 1A, 1B, 1C, 1F and 1G based upon different class characteristics. Items 1A, 1 B and 1 C were not fired through the barrel of the same firearm as Iterms 1F and 1G based upon different individual microscopic characteristics. Opinion/Interpretation: Items 1A, 1B, 1C, 1D, 1E, 1F and 1G are consistent with bullets loaded in 9mm caliber cartridges based upon the weight and style. Item 1D exhibits characteristics found in (but not limited to) the following firearms: Astra, Bryco Arms, IMI, Intratec,Jennings/Bryco,Jimenez Arms, Lorcin, Sigarms, SigSaur, Smith & Wesson, Stallard Arms, Star, SWD Inc and Walther 9mm caliber firearms. Items 1F exhibit characteristics found in (but not limited to) the following firearms: Beretta, Caruk, Ceska Zbrojovka, Colt, CZ, Daewoo, EAA Corp, Fabrique Nationale, FN/Browning, Heckler & Kock, IMI, Kahr Arms, Keltec, Norinco, Palmetto State Armory, Ruger, SigSauer, Springfield Armory, Springfield Inc, SWD Inc, Tanfoglio and Taurus 9mm caliber firearms. Evidence in this case will be returned to the investigative agency.

TABLE 2

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X43FBN	The bullet Item 3 was dicharged from the suspect's firearm (Item 1). The bullets Item 4 and Item 5 were discharged from second firearm. The bullet Item 2 was discharged from third firearm.
X7DZJX	Exhibit 3 (questioned recovered projectile) was identified as having been fired in the same 9mm firearm as exhibit 1 (test fired projectile). Exhibits 4 and 5 (questioned recovered projectiles) 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 2 (questioned recovered projectile) 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.
XFEHWL	Identification - Agreement of class and individual characteristics were observed. It is the opinion of the examiner that the observed toolmarks were created by the same tool. Elimination - Disagreement of class characteristics and/or individual characteristics were observed. It is the opinion of the examiner that the observed toolmarks were not created by the same tool. Item #3 (fired bullet) compared to Item #1 (test fired bullets from firearm) - Identification Item #4 (fired bullet) compared to Item #5 (fired bullet) - Identification Items #4 & 5 (fired bullets) compared to Item #1 (test fired bullets from firearm) - Elimination Item #2 (fired bullet) compared to Items #1, 4 & 5 (fired bullets) - Elimination
XFH3RE	The Item 3 bullet was fired in the same firearm as the known bullets (Item 1).
XGAZYM	Item 2 was eliminated as having been fired by the same firearms as Items 1, 2, 4 and 5. These eliminations are based on differences in class characteristics. The difference being the land and groove engraved area widths. Item 3 was identified as having been fired by the same firearm as Item 1. This identification is based on the agreement of class characteristics, and individual characteristics observed in the land engraved areas. Items 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 land engraved areas. Items 4 and 5 were identified as having been fired by the same unknown firearm. This identification is based on the agreement of class characteristics, and individual characteristics observed in the land engraved areas. The size, weight and configuration of Item 2 are most consistent with bullets typically found loaded in 9mm Luger / 357 SIG cartridges. The list of firearms with similar class characteristics that could have fired Item 2 was too inclusive to be of any investigative value. The complete list of possible firearms that may have fired Item 2 will be maintained in the case file. The size, weight and configuration of Items 4 and 5 are most consistent with bullets typically found loaded in 9mm Luger / 357 SIG cartridges. The list of firearms with similar class characteristics that could have fired Items 4 and 5 was too inclusive to be of any investigative value. The complete list of possible firearms that may have fired Items 4 and 5 will be maintained in the case file.
XJ6MXH	Finding number 3 was fired from a gun. Finding number 2 was not fired from a gun. Findings number 4 and 5 were fired from a different single gun.
XMYHCX	Microscopic examination and comparison reveal that the bullets, Items 1.A and 1.C, were fired from the same firearm based on agreement of class and individual characteristics. Microscopic examination and comparison of the bullets, Items 1.D and 1.E, reveal that they were fired from the same firearm based on agreement of class and individual characteristics, and are consistent with being fired from Beretta, FN/Browning, CZ, H&K, Keltec, Ruger, SAR Arms, Springfield Armory, and Taurus 9mm pistols. This list is provided only as an investigative lead and is not intended to be an all-inclusive list. Microscopic examination and comparison reveal that the bullets, Items 1.A and 1.C, were not fired from the same firearm as the bullets, Items 1.D and 1.E, based on disagreement of individual characteristics. Microscopic examination and comparison reveal that the bullet, Item 1.B, was not fired from the same firearms as the

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	bullets, Items 1.A, 1.C, 1.D and 1.E, based on disagreement of class characteristics. Microscopic examination of the bullet, Item 1.B, reveals that it is consistent with being fired from Bryco Arms, Sig Arms, and Smith & Wesson 9mm pistols. This list is provided only as an investigative lead and is not intended to be an all-inclusive list.
XNAKYW	Microscopic examination and comparison reveal that the bullets, Items 1.A and 1.C, were fired from the same firearm based on agreement of class and individual characteristics. Microscopic examination and comparison of the bullets, Items 1.D and 1.E, reveal that they were fired from the same firearm based on agreement of class and individual characteristics, and are consistent with being fired from Beretta, Canik, CZ, H&K, Keltec, Norinco, Ruger, SAR Arms, Sig Sauer, Springfield Armory and Taurus 9mm pistols. This list is provided only as an investigative lead and is not intended to be an all-inclusive list. Microscopic examination and comparison reveal that the bullets, Items 1.A and 1.C, were not fired from the same firearm as the bullets, Items 1.D and 1.E based on disagreement of individual characteristics. Microscopic examination and comparison reveal that the bullets, Items 1.A and 1.C, were not fired from the same firearm as the bullet, Item 1.B based on disagreement of class characteristics. Microscopic examination and comparison reveal that the bullets, Items 1.D and 1.E, were not fired from the same firearm as the bullet, Item 1.B based on disagreement of class characteristics. Microscopic examination of the bullet, Item 1.B, reveals that it is consistent with being fired from Bryco Arms, Jennings/ Bryco, Jimenez Arms, Lorcin, Sig Arms, Sig Sauer and Smith & Wesson 9mm pistols. This list is provided only as an investigative lead and is not intended to be an all-inclusive list.
XXUWAA	Conclusion: 1. 1.1- Item 2 was eliminated form having been fired from the same firearm as the test fired bullets, Item 1. 1.2- Item 2 was fired from an unidentified firearm. 2. 2.1-Item 3 was identified as having been fired from the same firearm as the test fired bullets, Item 1. 3. 3.1- Item 4 and Item 5 were eliminated from being fired from the same firearm as the test fired bullets, Item1. 3.2- Item 4 and Item 5 were identified as both being fired from a second unidentified firearm.
XYPECB	IDENTIFICATION: Item number 3 is identified with items number 1; all were fired by the same firearm.
XZNDWH	After comparing Item 2 to item 5 with three rounds of PMC Bronze 9mm Luger 115 grain FMJ ammunition test fired from the suspect's seized firearm (Sig Sauer P365), Item 3 and Item 4 were found to have the matching characteristics with those from the test fire. Meanwhile, Item 2 and Item 5 did not share the same characteristics. Therefore, Item 3 and 4 were likely to have been fired from the seized firearm while Item 2 and Item 5 were likely fired from a different firearm.
Y6HULG	The item 2 fired bullet was eliminated from the Item 1, 3, 4, and 5 bullets. The item 4 and 5 bullets were identified as having been fired in the same firearm. The item 3 bullet was eliminated from the item 4 and 5 bullets. The item 3 bullet and item 1 bullets were identified as having been fired in the same firearm.
YH649L	Item 1-1 was microscopically compared to Item 1-3 and was found to have areas of corresponding individual characteristics within the land and groove impressions. Item 1-3 was identified as having been fired in the same firearm as Item 1-1. Item 1-4 was microscopically compared to Item 1-5 and was found to have areas of corresponding individual characteristics within the land impressions. Item 1-5 was identified as having been fired in the same firearm as Item 1-4. Items 1-1 and 1-3 were microscopically compared to Items 1-4 and 1-5 and were found to have similar class characteristics; however, based on disagreement of individual characteristics within the land impressions, they were eliminated as having been fired in the

TABLE 2

WebCode	Conclusions
	same firearm. Item 1-2 was microscopically compared to Items 1-1, 1-3, 1-4 and 1-5 and was found to have different class characteristics based on the land and groove widths. Item 1-2 was eliminated as having been fired in the same firearm.
YHZL6J	The one (1) fired bullet, item 1.3, was identified as having been fired in the Sig Sauer pistol, item 1.1, based on the agreement of all discernable class characteristics and agreement of corresponding individual microscopic markings. The two (2) fired bullets, items 1.4 and 1.5, were 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 bullets, items 1.4 and 1.5, were consistent in all observable class characteristics (caliber, number of lands and grooves, rifling, twist, and widths of lands and grooves) as the Sig Sauer pistol, item 1.1. While there is some disagreement of microscopic markings, the markings present are insufficient for an elimination. The results are inconclusive. The one (1) fired bullet, item 1.2, was eliminated as having been fired in the Sig Sauer pistol, item 1.1, and eliminated as having been fired in the same firearm as items 1.4 and 1.5, based on a difference in class characteristics (widths of lands and grooves).
YQJXJV	On 10/23/2025, I received the following proficiency test from Collaborative Testing Services (CTS) via UPS delivery [Number]: CTS Proficiency Test No 2025-5262, Sample Pack: F2 which contained the following items: Item 1: Three known test-fired bullets discharged from the suspect's firearm. Item 2: Questioned recovered bullet. Item 3: Questioned recovered bullet. Item 4: Questioned recovered bullet. Item 5: Questioned recovered bullet. The above items were inspected and found to be as stated above and as stated by CTS. Item 1, Item 2, Item 3, and Item 4 were microscopically examined and determined to be: Item 1 - three (3) fired, nominal .38 caliber, full metal (copper) jacket bullets labeled as having been fired by a Sig Sauer P365 firearm. - Item 2 - one (1) fired, nominal .38 caliber, full metal (copper) jacket bullet with 6-Right conventional rifling impressions. Item 3 - one (1) fired, nominal .38 caliber, full metal (copper) jacket bullet with 6-Right conventional rifling impressions. Item 4 - one (1) fired, nominal .38 caliber, full metal (copper) jacket bullet with 6-Right conventional rifling impressions. Item 5 - one (1) fired, nominal .38 caliber, full metal (copper) jacket bullet with 6-Right conventional rifling impressions. A representative bullet from Item 1 was microscopically inter-compared with Items 2-5. It is my opinion that: Item 3 was fired by Item 1 based on sufficient agreement of microscopic marks found in the land engraved areas of the rifling - Items 2, 4, and 5 could not be identified nor eliminated as having been fired by Item 1 based on a lack of sufficient quality and quantity of microscopic markings. All evidence was repackaged and retained.
YVAZRN	The bullet Q2 was identified as having been fired with the K1 Sig Sauer P365 9mm Luger firearm. The bullets Q3 and Q4 were identified as having been fired with the same unknown firearm. The bullets Q3 and Q4 were excluded as having been fired with the Sig Sauer P365 9mm Luger Pistol K1 based on sufficient disagreement of individual characteristics. The bullet Q1 was excluded as having been fired with the Sig Sauer P365 9mm Luger Pistol K1 based on sufficient disagreement of land and groove impression widths. The bullets Q2-Q4 were excluded as having been fired with the same firearm(s) as the bullet Q1 based on sufficient disagreement of land and groove impression widths. The bullet Q2 was excluded as having been fired with the same firearm(s) as the bullets Q3 and Q4 based on sufficient disagreement of individual characteristics
YVT7TZ	Items 2, 3, 4, and 5 are consistent with 9mm Luger caliber bullets that were fired from a barrel rifled with six (6) lands and grooves, right twist. Item 3 was identified as having been fired from Item 1 pistol based on agreement of all discernible class characteristics and sufficient agreement of individual characteristics. Items 4 and 5 were identified as having been fired from

TABLE 2

WebCode	Conclusions
	the same unknown firearm based on agreement of all discernible class characteristics and sufficient agreement of individual characteristics. Items 4 and 5 were not fired from Item 1 pistol based on significant disagreement of individual characteristics. Item 2 was not fired from Item 1 pistol or from the same unknown firearm as Items 4 and 5 based on significant disagreement of class characteristics.
YXAD63	Caliber Determination Results The Item 1-1 bullet was determined to be caliber 38 Class (9mm Luger/357 Sig). The Item 1-2 bullet was determined to be caliber 38 Class (9mm Luger/357 Sig). The Item 1-3 bullet was determined to be caliber 38 Class (9mm Luger/357 Sig). The Item 2 bullet was determined to be caliber 38 Class (9mm Luger/357 Sig). The Item 3 bullet was determined to be caliber 38 Class (9mm Luger/357 Sig). The Item 4 bullet was determined to be caliber 38 Class (9mm Luger/357 Sig). The Item 5 bullet was determined to be caliber 38 Class (9mm Luger/357 Sig). Other Results The Item 1 packaging contained Items 1-1 through 1-3. Comparison Results The Item 2 bullet was fired by a different firearm than the Item 1-1 through 1-3, and 3 through 5 bullets. The Item 1-1, 1-2, 1-3, and 3 bullets were fired by a different firearm than the Item 4 and 5 bullets. There is agreement of all discernible class characteristics and possible individual characteristics between the Item 1 -1, 1-2, 1-3, and 3 bullets. However, the potential for subclass carryover could not be eliminated. Therefore, the Item 1 -1, 1-2, 1-3, and 3 bullets 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 and possible individual characteristics between the Item 4 and 5 bullets. However, the potential for subclass carryover could not be eliminated. Therefore, the Item 4 and 5 bullets were either fired by the same firearm, or by a different firearm manufactured with the same tool in the same approximate state of wea r. Methodology The following methodologies were used in the examination of this case: Visual Examination Physical Examination Physical Measurements Microscopic Examination Microscopic Comparison [Participant submitted data in a format that could not be reproduced in this report.]
Z36J8P	A microscopic examination and comparison of the evidence described above revealed the following: Deformed bullet (3) is IDENTIFIED as having been fired from the SAME gun as known test fired bullets (1.1-1.3) based on the observed agreement of their class characteristics and sufficient agreement of their individual characteristics. Deformed bullet (4) and Deformed bullet (5) are IDENTIFIED as having been fired from the SAME gun based on the observed agreement of their class characteristics and sufficient agreement of their individual characteristics. Deformed bullet (2) is ELIMINATED as having been fired from the same gun as known test fired bullets (1.1-1.3) and Deformed bullet (3) based on the observed disagreement of class characteristics. Deformed bullet (2) is ELIMINATED as having been fired from the same gun as Deformed bullets (4,5) based on the observed disagreement of class characteristics. Deformed bullets (4,5) are ELIMINATED as having been fired from the same gun as known test fired bullets (1.1-1.3) and Deformed bullet (3) based on the observed disagreement of individual characteristics.
Z3RTHE	Microscopic examination, comparison and caliber determination of the unknown caliber copper jacketed projectiles in items #2 through #5 revealed that they were consistent with 38 caliber class ammunition (which includes 9mm). Further examination revealed the following: >items #4 and #5 possessed the same class characteristics as well as sufficient agreement of individual markings to determine that they were fired from the same firearm. >items #2 and #3 possessed different rifling characteristics from one another and from items #4 and #5 and were fired from a second and third firearm. The Sig Sauer pistol, item #1, was test fired using material from the laboratory collection and was found to be operable. The reference fired

TABLE 2

WebCode	Conclusions
	projectiles obtained were compared to the unknown caliber copper jacketed projectiles in items #2 through #5. It was determined that item #3 possessed the same class characteristics as the test fired material in item #1 as well as sufficient agreement of individual markings to determine that item #3 was fired from the Sig Sauer pistol, item #1. Items #2, #4 and #5 possessed different rifling characteristics from item #1 and were determined not to have been fired from the Sig Sauer pistol, item #1.
ZAPMER	The bullets, Lab Items 1 and 3, were identified as having been fired by the same firearm based on agreement of class characteristics and corresponding individual detail using microscopic comparison. The bullets, Lab Items 4 and 5, were identified as having been fired by the same firearm based on agreement of class characteristics and corresponding individual detail using microscopic comparison. The bullets, Lab Items 1 and 3, were eliminated from having been fired by the same firearm as Lab Items 4 and 5 based on disagreement of individual characteristics using microscopic comparison. The bullet, Lab Item 2, was eliminated from having been fired by the same firearms as Lab Items 1 and 3, or 4 and 5 based on disagreement of class characteristics using microscopic comparison.
ZF4PTU	Microscopic examination and comparison reveal that the bullets, Items 1.A and 1.C, were fired from the same firearm based on agreement of class and individual characteristics. Microscopic examination and comparison of the bullets, Items 1.D and 1.E, reveal that they were fired from the same firearm based on agreement of class and individual characteristics, and are consistent with being fired from Beretta, Canik, CZ/Czechoslovakia, Fabrique Nationale, FN/Browning, Heckler & Koch, Keltec, Palmetto State Armory, Ruger, SAR Arms/Sarsilmaz, Sig Sauer, Springfield Armory, Tanfoglio and Taurus 9mm pistols. This list is provided only as an investigative lead and is not intended to be an all-inclusive list. Microscopic examination and comparison reveal that the bullets, Items 1.A and 1.C, were not fired from the same firearm as the bullets, Items 1.D and 1.E based on disagreement of individual characteristics. Microscopic examination and comparison reveal that the bullets, Items 1.A and 1.C, were not fired from the same firearm as the bullet, Item 1.B based on disagreement of class characteristics. Microscopic examination and comparison reveal that the bullets, Items 1.D and 1.E, were not fired from the same firearm as the bullet, Item 1.B based on disagreement of class characteristics. Microscopic examination of the bullet, Item 1.B, reveals that it is consistent with being fired from Astra, Hi-Point, Jennings/Bryco, Jimenez, Llama, Lorcin, Sig Sauer, Smith and Wesson, and Star 9mm pistols. This list is provided only as an investigative lead and is not intended to be an all-inclusive list.
ZGQYAN	Item 2, one fired 38/9 mm caliber bullet, was eliminated as having been fired from the Items 1, 3, 4, and 5 bullets. Item 2 was fired by an unknown 38/9 mm caliber firearm. Item 3, one fired 38/9 mm caliber bullet, was identified as having been fired from the same firearm that fired the Item 1 bullets. Items 4 and 5, two fired 38/9 mm caliber bullets, were identified as having been fired from a second unknown 9 mm caliber firearm. Items 4 and 5, two fired 38/9 mm caliber bullets, were eliminated as having been fired from the same firearm that fired the Item 1 bullets.
ZKPB7N	Based on the agreement of discernible class characteristics and sufficient corresponding individual detail, fired bullet Items 1(A-C) and 3 were identified as having been fired from the same firearm. Based on the agreement of discernible class characteristics and sufficient corresponding individual detail, fired bullet Items 4 and 5 were identified as having been fired from the same firearm. Based on the significant disagreement of individual characteristics, fired bullet Items 1(A-C) and 3 were eliminated as having been fired from the same firearm as fired bullet Items 4 and 5. Based on the significant disagreement of class characteristics, fired bullet Item 2 was eliminated as having been fired from the same firearms as fired bullet Items 1(A-C)

TABLE 2

WebCode	Conclusions
	and 3 and fired bullet Items 4 and 5.
ZLKT8P	A microscopic examination and comparison of the evidence described above revealed the following: Deformed bullet (3) is IDENTIFIED as having been fired from the same gun as known test fired bullets (1.1, 1.2, 1.3) based on the observed agreement of their class characteristics and sufficient agreement of their individual characteristics. Deformed bullets (4, 5) are IDENTIFIED as having been fired from the same gun based on the observed agreement of their class characteristics and sufficient agreement of their individual characteristics. Deformed bullets (4, 5) are ELIMINATED as having been fired from the same gun as known test fired bullets (1.1, 1.2, 1.3), and deformed bullet (3), based on the observed disagreement of individual characteristics. Deformed bullet (2) is ELIMINATED as having been fired from the same gun as known test fired bullets (1.1, 1.2, 1.3), and deformed bullet (3), based on the observed disagreement of class characteristics. Deformed bullet (2) is ELIMINATED as having been fired from the same gun as deformed bullets (4, 5) based on the observed disagreement of class characteristics.
ZN8DDU	A microscopic comparative examination disclosed the following results: Item#3 (B2) is identified as having been fired from item#1 (P1). Item#4 (B3) and item#5 (B4) are identified as having been fired from the same unknown firearm. Item#4 (B3) and item#5 (B4) are eliminated as having been fired from item#1 due to differences in individual characteristics. Item#2 is eliminated as having been fired from items# 1, 3, 4, & 5 due to differences in class characteristics (LAG dimensions).
ZRNXYA	1. The bullets marked E-1 through E-3 ("Item" 1) and E-5 ("Item" 3), corresponding to exhibit 1, are 9mm caliber, with right-hand rifling (R-6), and were fired from the same firearm (Identification). 2. The bullets marked E-6 (Item 4) and E-7 (Item 5), corresponding to exhibit 1, are 9mm caliber, with right-hand rifling (R-6), and were fired from the same firearm (Identification). 3. The bullet marked E-4 (Item 2), corresponding to exhibit 1, is a 9mm caliber, right-hand rifling (R-6), and was not fired from the firearm used to fire the bullets marked E-1 through E-3 (Item 1) , E-5 ("Item" 3), E-6 (Item 4) and E-7 (Item 5), corresponding to exhibit 1 (Elimination).
ZUGQYY	1. The study of evidence items 1, 2, 3, 4, and 5 was conducted, and they correspond to 9x19mm caliber bullets. 2. Upon performing a microcomparison study between bullets item 1 and bullets item 2, 3, 4, and 5, it was concluded that bullet item 3 was fired from the same firearm that fired bullets item 1.
ZWCGXK	The size, weight and configuration of Item 2 are most consistent with bullets typically found loaded in 9mm Luger and 357 SIG cartridges. Class characteristics indicate the following firearms could have possibly fired Item 2: Astra, Bond Arms, Bryco Arms, FN, Glock, Hi-Point, IMI, Intratec, Llama, Maverick Arms, Sig Sauer, Smith & Wesson, Stallard Arms, Star, Taurus, and Walther brand 9mm Luger pistols, and Springfield Armory brand 357 SIG pistols. This is not meant to be an all-inclusive list but rather an investigative aide; and any suspect firearm(s) of the appropriate caliber-class should be submitted for comparison. The complete list will be maintained in the case file. The size, weight and configuration of Items 4 and 5 are most consistent with bullets typically found loaded in 9mm Luger and 357 SIG cartridges. Class characteristics indicate the following firearms could have possibly fired Items 4 and 5: 80 Percent Arms, Browning, Canik, Davis Industries, EAA, FN, Glock, Hi-Point, Intratec, Kimber, Norinco, Palmetto State Armory, Polymer80, Radom, Remington, Ruger, Springfield Armory, Tanfoglio, Taurus, and Walther brand 9mm Luger pistols. This is not meant to be an all-inclusive list but rather an investigative aide; and any suspect firearm(s) of the appropriate caliber-class should be submitted for comparison. The complete list will be maintained in the

TABLE 2

WebCode	Conclusions
	case file. Item 2 was eliminated as having been fired by the same firearm that discharged Items 1 and 3 and by the same unknown firearm(s) that discharged Items 4 and 5. This elimination is based on differences in class characteristics. The difference being the land engraved area widths. Item 3 was identified as having been fired by the same firearm that discharged Item 1. This identification is based on the agreement of class characteristics, and individual characteristics observed in the land engraved areas. Items 4 and 5 were inconclusive (II) to Items 1 and 3. Item 4 was inconclusive (I) to Item 5.
ZZTNGD	Items 1, 3 The bullet was microscopically identified as having been fired from the Item 1 firearm. The bullet was determined to be of 9mm caliber displaying conventional rifling characteristics of six lands and grooves, right twist. Item 2 - The bullet was not fired from the Item 1 firearm nor the firearm that fired the bullets Item/s 4 and 5. The bullet was determined to be of 9mm caliber displaying conventional rifling characteristics of six lands and grooves, right twist. The list of manufacturers of firearms with similar rifling characteristics is extensive and can be provided upon request. Items 4, 5 - The bullets were microscopically identified as having been fired from the same firearm, but a different firearm than the firearm that fired Item/s 1 and 3. The bullets were determined to be of 9mm caliber displaying conventional rifling characteristics of six lands and grooves, right twist. The list of manufacturers of firearms with similar rifling characteristics is extensive and can be provided upon request.

Additional Comments

TABLE 3

WebCode	Additional Comments
22T6E9	Based on the agreement of class characteristics, Item 4 was microscopically compared to test fired bullets from the Item 1 firearm. Item 4 could not have been fired from the Item 1 firearm based on significant disagreement of individual characteristics. Based on the agreement of caliber, Item 2 was microscopically compared to Item 4 and test fired bullets from the Item 1 firearm. Item 2 could not have been fired from the Item 1 firearm or the same unknown firearm as Item 4 based on the significant disagreement of class characteristics. Possible firearms that may have fired Item 2 include numerous 9mm caliber firearms by various manufacturers.
26ZWW9	The exhibit fired bullet (Item 4 & 5) had been discharged in the same firearm (Unknown Firearm A). The exhibit fired bullet (Item 2) had been discharged in a different firearm (Unknown Firearm B) to that of Items 4 & 5.
2GGJ9U	Item 1.A = Item 1 Item 1.B = Item 2 Item 1.C = Item 3 Item 1.D = Item 4 Item 1.E = Item 5
3XGTP7	As the first step of the experiment, a comparison microscope was used to compare the morphological characteristics of the rifling marks on the Item 1 bullets, confirming that the three bullets were fired from the same firearm. Subsequently, Item 1 was compared with Items 2–5 to determine which sample was fired from the same firearm as Item 1. The Item 1 bullet with the clearest morphological characteristics of rifling marks was selected and compared with the other samples. Consequently, it was concluded that the Item 3 bullet was fired from the same firearm as Item 1. Furthermore, the conclusion was verified through cross-comparison with the remaining two Item 1 bullets. Additionally, the conclusion of the analysis results was further validated by comparing the Item 3 bullet with the Item 2, Item 4, and Item 5 bullets.
4CBZYR	My Item 1.A = CTS Item 1 My Item 1.B = CTS Item 2 My Item 1.C = CTS Item 3 My Item 1.D = CTS Item 4 My Item 1.E = CTS Item 5
4JFGU8	LIMITATIONS: 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. ATTRIBUTION: All results apply to the items as received and the source information provided. The “Evidence List Report” attached to this report relates the laboratory item number to the submitter item number and description.
4MC3LA	Items 001.D (Item 4) and 001.E (Item 5) are inconclusive because there was agreement of all discernible class characteristics and only occasional agreement of individual characteristics.
4U47YK	The method of testing for ammunition components (that have results that fall into the range of conclusions defined below) included physical examination and microscopic comparison. Elimination results that are reported as based on a difference in class characteristics include only physical examination. Identified: Agreement of all discernible class characteristics and sufficient agreement of individual characteristics where the extent of agreement leads to the conclusion that the items were fired in/from the same firearm. Inconclusive (+): Agreement of all discernible class characteristics and some agreement of individual characteristics but insufficient for an identification. Inconclusive: Agreement of all discernible class characteristics without significant agreement or disagreement of individual characteristics; therefore, the

TABLE 3

WebCode	Additional Comments
	items could neither be identified nor eliminated as having been fired in/from the same firearm. Inconclusive (-): Agreement of all discernible class characteristics and some disagreement of individual characteristics, but insufficient for an elimination. Eliminated: Significant disagreement of discernible class characteristics and/or individual characteristics leading to the conclusion that the items were not fired in/from the same firearm.
6LHUYN	1. Identification: Based on agreement of individual characteristics observed through microscopic comparative examination. 2. Elimination: Based on significant disagreement of appreciable class and/or individual characteristics. 3. The microscopic comparison examination between the bullets marked E-1 through E-4 (“Item” 1 and “Item” 3), the bullets marked E-5 and E-6 (“Item” 4 and “Item” 5), with the bullet marked E-7 (“Item” 2), corresponding to piece 1, was not carried out due to incompatibility in the class characteristics with respect to the width of the lands and grooves of the rifling.
6V9F6M	Items 1 and 4 had some agreement of individual characteristics and all discernible class characteristics, but insufficient for an identification. Items 1 and 5 had some agreement of individual characteristics and all discernible class characteristics, but insufficient for an identification. Items 1 and 2 had significant disagreement of discernible class characteristics and/or individual characteristics.
6XCD8P	Generally speaking, the "test fires" labeled as item 1-1 did not display allot of individual characteristics. The repeatability of these three bullets was also not great. I had to use LIMP combos to identify item 1-3 to this group of test fires. In addition, items 1-4 and 1-5 were identified to each other also using LIMP combos, due to the low quantity of individual characteristics observed in these two bullets. This fact that both groups listed above had limited data to compare and low quality of reproducibility, I was not able to eliminate the groups from each other although some differences were observed in the overall look of the LIMPS and GIMPS.
7UUB9A	The bullets „Item 4” and „Item 5” (calibre 9x19mm/9mm Luger), presented at the examination in the box marked „Test No. 25-5262”, were both discharged from the same firearm.
7VPUAB	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

TABLE 3

WebCode	Additional Comments
	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. [Participant submitted data in a format that could not be reproduced in this report.]
8CTLUR	En el hecho, hubieron 3 armas involucradas. [Requested translation was not provided by time of publication.]
8PUGND	For 'Item 4' and 'Item 5', these would have been reported as 'unlikely' per laboratory procedures, though they were reported as 'No' in Q1.
8THTP6	See explanations within response for (2). [Refer to Table 2: Conclusions.]
8UAR33	Identification: Based on the agreement of the individual characteristics observed through the microscopic comparison examination. Elimination: Based on the disagreement of individual characteristics observed through the microscopic comparison examination.
9BRB99	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

TABLE 3

WebCode	Additional Comments
	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. [Participant submitted data in a format that could not be reproduced in this report.]
9HCBPL	Item 4: The striation marks did not matched conclusively
ABHXUX	ITEM 1, consisting of three bullets, is concluded to be consistent with each other. The bullet with the number ITEM 2 recovered and questioned corresponds to a 9 mm LUGER caliber. The bullets marked ITEM 4 and ITEM 5 are concluded to match and were fired from the same firearm. Therefore, ITEM 1, consisting of three bullets fired from the confiscated Sig Sauer P365 firearm, is excluded.
AGFCPD	The items share similar class characteristics. Not all of the land impressions or groove impressions are marked well. There was limited reproducibility of individual characteristics between the Item 1 tests in some areas. No correspondence to Item 1 and 3 was found when compared to Item 4 and 5. There was some disagreement of individual characteristics for 4 and 5 when compared to Items 1 and 3, but not enough for an elimination.
BFXKE9	In the absence of a firearm bore cast to evaluate, the above stated conclusions are based on the assumption that subclass carryover was not an influencing factor in the microscopic comparisons and the characteristics used to reach any source conclusions are individual in nature. 001 A is CTS Item 1. 001 B is CTS Item 2. 001 C is CTS Item 3. 001 D is CTS Item 4. 001 E is CTS Item 5.
BQHXR7	The four bullets from the scene (items 2 through 5) were compared microscopically to each other and to test-fired bullets (Item 1). Item 2 was not fired in the same firearm as items 1, 3, 4 or 5 based on class characteristic differences observed in land and groove impression widths. Item 3 was fired in the same firearm as item 1 based on agreement of class characteristics and sufficient corresponding individual detail observed in multiple land impressions. Items 4 and 5 were fired in the same firearm as each other based on agreement of class characteristics and sufficient corresponding individual detail observed in multiple land impressions. However, items 4 and 5 were not fired in the same firearm as items 1 and 3 based on numerous differences observed in the microscopic detail in multiple land

TABLE 3

WebCode	Additional Comments
	impressions. 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.
BTYF6B	Similarities have been observed between the marks in the bullets Item 4 and 5. This observation lead to an additional examination between the marks in Item 4 and 5. The findings of this examination were viewed under the following two hypotheses: - H3: The questioned bullets are fired by one firearm - H4: The questioned bullets are fired by two firearms of the same calibre and with the same class characteristics. The findings of the additional examination are minimal much more probable when H3 is true than when H4 is true.
C76U87	The projectile from item five matches item four for a second firearm and the projectile from item two for a third firearm.
CPK2KN	The three (03) bullets marked as Items #02, #04, and #05 were fired by two (02) firearms different from the SIG SAUER pistol, model P365, 9mm caliber, seized from a suspect. Distributed as follows: Items #04 and #05 were fired by the same firearm. Items #02 by another firearm.
CXBPD6	The incriminating projectile described as item-3, was fired by the firearm, pistol type, caliber 9mm, brand SIG SAUER, model P365.
D3ZJQW	The quality of the samples was good. The difficulty of the test was appropriate.
DLFVF2	Item 4 and Item 5 – two (2) bullets were fired from one (1) weapon or firearm pistol (not matched from the pistol Sig Sauer P365 cal. 9x19mm of Item 1). Item 2 – one (1) bullet cal. 9x19mm was fired from one (1) weapon or firearm pistol (not matched from the pistol Sig Sauer P365 cal. 9x19mm of Item 1).
DLWPJW	1. Identification: Based on the agreement of individual characteristics observed through microscopic comparison examination. 2. Elimination: Based on the disagreement of class and/or individual characteristics observed through microscopic comparison examination. 3. [Participant Code & Web Code]. Due Date: December 22nd, 2025.
EZQZWF	Item 1.A - CTS Item 1 Item 1.B - CTS Item 2 Item 1.C - CTS Item 3 Item 1.D - CTS Item 4 Item 1.E - CTS Item 5
F7U4KT	The result of the micro-comparative study is the interpretation of the concordance of the Class, Subclass and Individual characteristics between the elements analyzed based on the technical competence of the expert who analyzes. ISO/IEC 17025:2017 (7.8.1.2.2). The opinion is based on the test results, the examiner's professional judgment and technical competence. ISO/IEC 17025:2017 (7.8.2.2).
FQEZ36	The projectiles in Items 4 and 5 were fired in the same gun, based on agreement observed in individual characteristics.
FRD63K	1) Police will be advised to be in the look out and bring in other two firearms for testing consistent with the bullets found at the scene: one for evidence items 4 and 5 and another one for evidence item 2. 2) Class characteristics of evidence item 2 are different in relation to evidence items 1,4 and 5.
FRTQA2	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

TABLE 3

WebCode	Additional Comments
	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. [Participant submitted data in a format that could not be reproduced in this report.]
GR6NWK	Items 1 and 3 have marks of middling quality and reproduction, Rifling impressions are very shallow and there is some slippage. Items 4 and 5 have marks of mediocre quality and reproduction, Rifling impressions are fairly shallow and there is some slippage. Rifling widths between the two groups are close, largely indistinguishable, but a few widths look slightly off. There are some provocative, but ultimately unpersuasive, similarities in striae between the two groups. Shoulders don't look very rounded but there looks to be some departure from squareness. The relationship between the 1/3 group and the 4/5 group is making more intuitive sense to me as being two different, but similar, firearms. But, due to the signs of potentially unideal bullet engagement and lacking the firearm, more detailed case information, and confidence that test providers can be relied upon to provide realistic scenarios, I'm not prepared to discount wear/engagement effects as having produced the slight rifling differences and insufficient individual characteristic correspondence.

TABLE 3

WebCode	Additional Comments
HG9V9R	1. Identification: Based on the agreement regarding individual characteristics observed through microscopic comparison examination. 2. Elimination: Based on significant disagreement regarding appreciable class and/or individual characteristics. 3. The requested microscopic comparison examination between the bullet marked E-7 ("Item" 2), corresponding to exhibit 1, and bullets marked E-1 through E-3 ("Item" 1), E-4 ("Item" 3), E-5 ("Item" 4), and E-6 ("Item" 5), corresponding to exhibit 1, was not performed due to incompatibility of class characteristics, specifically regarding rifling type (size: width).
J4FVVV	items 4 and 5 were found to have been fired from the same firearm, which suggest that a there were three firearms involved in the crime scene.
J72FZY	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. [Participant submitted data in a

TABLE 3

WebCode	Additional Comments
	format that could not be reproduced in this report.]
JACVZC	Item 1.A - Item 1 Item 1.B - Item 2 Item 1.C - Item 3 Item 1.D - Item 4 Item 1.E - Item 5
JRF3GY	While comparing Items 4 and 5 to the other four bullets (1A to 1C, 3), there is agreement of discernible class characteristics and disagreement of individual characteristics, but insufficient for an elimination.
JTF3M4	Four bullets were submitted to be compared to test fires from the suspect's Sig Sauer P365 pistol. All of the bullets were nominal .38/ 9mm caliber that had a full metal jacket design and had been fired through a barrel having six right conventional rifling. I microscopically compared the submitted bullets to the test-fired bullets. Item 2 had different sized land and groove impressions; therefore, it was a class elimination that could not have been fired from the Sig Sauer pistol. The remaining three bullets had similar sized rifling impressions; therefore, I compared the individual firearm-produced marks within the land impressions. The following conclusions are based on the assumption that there is no subclass since no firearm was submitted and I could not evaluate the barrel for potential subclass influence. I found sufficient agreement for identification to conclude that Item 3 was fired from the suspect's Sig Sauer pistol. I found sufficient differences in the marks to conclude that Items 4 and 5 were not fired from the suspect's Sig Sauer pistol. I intercompared Items 4 and 5 and found sufficient agreement for identification to conclude that these two bullets had been fired from the same unknown pistol. A make and model determination can be conducted on the bullets not fired from the suspect's firearm. Please resubmit the evidence if that work is needed.
JZC6GP	Propositions: The test fired bullets were fired in the same firearm that discharged Items 2 - 5 The test fired bullets were not fired in the same firearm that discharged Items 2 - 5 Extremely strong support for the test fired bullets being discharged in another firearm, that discharged the fired bullet Item 2. Moderate support for the test fired bullets being discharged in the same firearm that discharged the fired bullet Item 3. Neutral support for the test fired bullets being discharged in the same firearm that discharged the fired bullets Item 4 and 5. Moderate support for Item 4 and Item 5 bullets being discharged in the same firearm.
K8RYGQ	The two questioned bullets identified as ITEM 4 and ITEM 5 recovered from crime scene, were fired by the same firearm.
K8WFFP	1. Identification: Based on the agreement of individual characteristics observed through microscopic comparison examination. 2. Elimination: Based on the disagreement of class and/or individual characteristics observed through microscopic comparison examination. 3. [Participant Code & Web Code]. Due Date: December 22nd, 2025.
KAKRGF	EL ITEM 4 Y 5 FUERON DISPARADOS POR UN ARMA DISTINTA EL ITEM 2 FUE DISPARADO POR OTRA ARMA CON LO QUE SE CONCLUYE QUE PARTICIPARON EN EL EVENTO 3 ARMAS DE FUEGO DISTINTAS. [Requested translation was not provided by time of publication.]
KJMCE3	The characteristics marks on the questioned recovered bullet Item 4 to be similar to the characteristic marks on the questioned recovered bullet Item 5.
KU6UAU	The two bullets (Exhibits 004 and 005) bear the same class characteristics as the test fired bullets from the Sig Sauer pistol (Exhibit 001); however, they lack sufficient reproducing individual characteristics for an identification or an elimination as having been fired from the Sig Sauer pistol (Exhibit 001).
KWMDLY	The projectiles in Items 4 and 5 were fired in the same gun, based on agreement observed in individual characteristics.

TABLE 3

WebCode	Additional Comments
KZAV83	Reproducibility was established for the Item 1 test fires as well as the Item 4 & 5 fired bullets: however, many areas of individual characteristics on all of these items were not marked great. The quality and quantity of correspondence that was seen between the test to test as well as Item 4 to Item 5 was not great. Some disagreement of individual characteristics was seen in the land and groove impression and the land and groove widths differed slightly between the test fires and Item 4 and 5. Not enough for an Elimination.
L9CCBF	A subclass evaluation was needed to determine if the detail on the bullets was individual or potential subclass carryover. Because no information was provided regarding subclass potential, and no barrel was available for evaluation, the conclusion is inconclusive but with a potential subclass association.
LBQW6N	The questioned recovered bullets labeled "Item 4" and "Item 5" were discharged from the same firearm.
LDE97E	The results strongly support that Item 4 and Item 5 was discharged from the same unknown firearm.
LKCZCN	1. Identification: Based on the agreement of individual characteristics observed through by microscopic comparison examination. 2. Elimination: Based on the disagreement of appreciable class and/or individual characteristics observed through microscopic comparison examination. 3. [Participant Code & Web Code].
M9YXQQ	Items #4 and #5 were identified as having been fired in the same firearm, however there were inconclusive results when comparing against Item #1 and #3. They were eliminated from the same firearm as #2 due to different land and groove dimensions.
MH7YPV	In the absence of a firearm bore cast(s) to evaluate, the above stated conclusions are based on the assumption that subclass carryover was not an influencing factor in the microscopic comparisons and that the characteristics used to reach any source conclusions were individual in nature.
MQF4Z2	A conclusion of identification (fired) is based on an analyst's and a co-analyst's independent 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). A conclusion of exclusion is based on an analyst's and co-analyst's independent determination that the observed characteristics of the items in question were marked by different tools.
NFD7Q7	1. Identification: Based on the agreement of individual characteristics observed through microscopic comparison examination. 2. Elimination: Based on the disagreement of class characteristics observed through microscopic comparison examination, specifically regarding the size of the groove and land impressions.
NJR29P	There was significant agreement seen in the fine detail in the land impressions of items 4 and 5. In my opinion items 4 and 5 were fired in the same gun.
NMDKDT	Conclusions are based on the assumption of no subclass. The bullets (Items 2, 3, 4, and 5) were microscopically compared to the test fired bullets (Item 1); they were also compared to each other. One questioned bullet (Item 3) was identified as having been fired in the same firearm as Item 1 based on the agreement of all observable class characteristics and sufficient corresponding individual detail observed in the rifling marks. Two questioned bullets (Item 4 and 5) were identified as having been fired in the same firearm based on the agreement of all observable class characteristics and sufficient corresponding individual detail observed in

TABLE 3

WebCode	Additional Comments
	rifling marks. Items 4 and 5 were eliminated as having been fired in the same firearm as Item 1 based on the disagreement of detail observed in rifling marks. One questioned bullet (Item 2) was eliminated as having been fired in the same firearm as Items 1, 3, 4, and 5 based on the class characteristic disagreement observed in land impression widths. 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.
NPHBHM	2 vs 3, 4, 5 - Elimination (Class), gross differences in width of LIMPs/GIMPs. 3 vs 4,5 - Elimination, differences in individual characteristics and measurable differences in LIMPs/GIMPs width. 4 vs 5 - Identification, Sufficient Agreement observed within LIMPs. 2 vs 1 Tests - Elimination (Class), gross differences in width of LIMPs/GIMPs. 3 vs 1 Tests - Identification, Sufficient Agreement observed within LIMPs.
NRJHE8	1.A = Item 1, 1.B = Item 2, 1.C = Item 3, 1.D = Item 4, 1.E = Item 5
PQRHJU	Conversely, item 2 differs from item 1 in its class characteristics, specifically with respect to groove width. Furthermore, items 4 and 5 exhibit identity with each other; however, they do not show identity with item 1.
QBXCQR	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

TABLE 3

WebCode	Additional Comments
	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. [Participant submitted data in a format that could not be reproduced in this report.]
QCFV3V	In conclusion statements provided in question 2, lab procedures were used to designate item labels. Items 1A1, 1A2, 1A3 = test Item 1 (three test fired bullets) Item 1B = test Item 2 Item 1C = test Item 3 Item 1D = test Item 4 Item 1E = test Item 5
QED6GK	The questioned bullets submitted as Item 4 and 5 were fired by the same weapon; that weapon, did not fire the questioned bullet submitted as Item 2.
R6CBBK	Without a bore cast, subclass could not be eliminated; therefore, it cannot be definitively determined, at this time, whether the toolmarks observed in agreement (1vs3 and 4vs5) are truly individual to one firearm or are of a type that could carry over from one barrel to the next during the manufacturing process, thus being individual to a parent tool.
RGY9NH	1. Identification: Based on agreement of individual characteristics observed through microscopic comparison examination. 2. Elimination: Based on disagreement of individual characteristics observed through microscopic comparison examination. 3. Microscopic comparison examination was not performed on bullet projectile E-4 (Item 2) with bullets E-1 to E-3 (Item 1) and bullets E-5 to E-7 (Items 3, 4, and 5), corresponding to piece 1, due to disagreement (incongruity) in class/individual characteristics regarding rifling (width).
RHR3N8	The two bullets identified as items #4 and 5 were fired from the same firearm but different from the SIG SAUER, P365 weapon; in this sense it is established that at least 3 firearms participated in the event.
RKVUFK	Samples 2, 4 and 5 did not have any degree of similarity when compared with item 1
RYDM4R	The forensic findings establish a clear distinction between the firearms used. The positive identification of Group One provides conclusive evidence that the confiscated SIG SAUER P365 was discharged at the scene. However, the presence of Groups Two and Three confirms a multi-weapon engagement, indicating that at least two other firearms remain at large. From a tactical and investigative standpoint, the ballistic profiles of the unidentified projectiles should be prioritized for database cross-referencing. This will determine if the additional weapons are linked to other forensic files, potentially identifying a broader pattern of criminal activity or multiple shooters.
TLKK2P	There are 3 firearms in total.
TMDDTP	Good agreement of coarse striations between items 1.4 and 1.5 but lack of strong agreement in fine striations. Some random agreement in fine striations between 1.4, 1.5 and 1.1 but, lack of coarse marking agreement. If a firearm is submitted for evaluation then results may change.
U8QTJF	Item 4 & Item 5 were identified within the limits of practical certainty as having been fired through the same firearm barrel.

TABLE 3

WebCode	Additional Comments
UCLG38	I use internal LIMS item numbers. The items are as follows: Item 01-01A through 01-01C = Agency Item 1 Item 01-02 = Agency Item 2 Item 01-03 = Agency Item 3 Item 01-04 = Agency Item 4 Item 01-05 = Agency Item 5
ULB8ME	Items 4 and 5 were identified to each other. Item 2 was not fired in the same firearm as any of the other exhibit bullets present.
UPBJHE	The test-fired bullets were relatively featureless in the land impressions. Some of the groove impressions had good detail which corresponded between items 1 and 3. However, groove impressions can be prone to subclass carryover. Without the suspect's firearm to examine for the presence of subclass carryover, I am unable to determine whether or not the correspondence observed is due to subclass carryover and therefore could be observed in other firearms. Therefore the evidence is inconclusive using the options provided.
WQ7GFQ	The hypothesis that bullets item 4 and item 5 were fired from the same firearm is very strongly supported. The hypothesis that bullet item 2 was fired from a third firearm is very strongly supported.
WT4Z9D	LIMITATIONS: 1Practical 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.
XFH3RE	Item 4, 5 bullets were fired in the same firearm which is different from the seized handgun.
XGAZYM	LEA/GEA widths of Items 4 & 5 appear dissimilar to Items 1 & 3; however, the difference is small and therefore eliminated on individual to err on the side of caution. Especially when the GRC results for Items 4 & 5 include the known suspect firearm (Sig Sauer P365).
XNAKYW	Item 1 is itemized as Item 1.A Item 2 is itemized as Item 1.B Item 3 is itemized as Item 1.C Item 4 is itemized as Item 1.D Item 5 is itemized as Item 1.E
XYPECB	IDENTIFICATION: Items numbers 4 and 5 were fired by the same firearm. ELIMINATION of item number 2 with items 4 and 5 were fired by a different firearm.
YVAZRN	A conclusion of Identification (fired) is based on an analyst's and a co-analyst's independent 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). A conclusion of Exclusion is based on an analyst's and a co-analyst's independent determination that the observed characteristics of the items in question were marked by different tools.
YXAD63	My result for Item 3 to Item 1 is inconclusive (potential subclass association). There was sufficient agreement between Item 3 and the Item 1 bullets; however, because of how the detail ran the length of the impressions and the fact a firearm was not submitted to evaluate for manufacturing marks, the potential for subclass could not be ruled out. As such, the result is inconclusive (potential subclass association).
ZF4PTU	Test Item #1 = 1.A Test Item #2 = 1.B Test Item #3 = 1.C Test Item #4 = 1.D Test Item #5 = 1.E

TABLE 3

WebCode	Additional Comments
ZRNXYA	1. Identification: Based on the agreement regarding individual characteristics observed through microscopic comparison examination. 2. Elimination: Based on significant disagreement regarding appreciable class and/or individual characteristics. 3. The requested microscopic comparison examination between the bullets marked E-1 through E-3 ("Item" 1), the bullet marked E-5 ("Item" 3), E-6 ("Item" 4), and the bullet projectile marked E-7 ("Item" 5), with the bullet projectile marked E-4 ("Item" 2), all corresponding to piece 1, was not performed due to class characteristic incompatibility, related to the width of the grooves and lands of the rifling, of the projectile described above.
ZWCGXK	Inconclusive: (I) Agreement of all discernible class characteristics and some agreement of individual characteristics, but insufficient for an identification. OR (II) Agreement of all discernible class characteristics without agreement or disagreement of individual characteristics due to an absence, insufficiency, or lack of reproducibility. OR (III) Agreement of all discernable class characteristics and disagreement of individual characteristics, but insufficient for an elimination.

-End of Report-
(Appendix may follow)

Collaborative Testing Services ~ Forensic Testing Program

Test No. 25-5262: Firearms Examination

DATA MUST BE SUBMITTED BY **Dec. 22, 2025, 11:59 p.m. EST** TO BE INCLUDED IN THE REPORT

Participant Code: U1234A WebCode: JGYKKL

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 bullets from a crime scene and seized a Sig Sauer P365 firearm from a suspect's possession who was apprehended later that day. Three rounds of PMC Bronze 9mm Luger 115 grain FMJ ammunition (consistent with the bullets found at the scene) were test fired with the suspect's firearm and the bullets collected. Investigators are asking you to compare the recovered bullets from the scene with those that were test fired from the suspect's firearm and report your findings.

Please note the following:

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

Items Submitted (Sample Pack F2):
Item 1: Three known test-fired bullets discharged from the suspect's firearm.
Item 2: Questioned recovered bullet.
Item 3: Questioned recovered bullet.
Item 4: Questioned recovered bullet.
Item 5: Questioned recovered bullet.

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

Item 2	Yes ○	No ○	Inconclusive* ○
Item 3	Yes ○	No ○	Inconclusive* ○
Item 4	Yes ○	No ○	Inconclusive* ○
Item 5	Yes ○	No ○	Inconclusive* ○

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

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

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

3.) Additional Comments

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

RELEASE OF DATA TO ACCREDITATION BODIES

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

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

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

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

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

ANAB Certificate No.

A2LA Certificate No.

Step 2: Complete the Laboratory Identifying Information in its entirety

Authorized Contact Person and Title

Laboratory Name

Location (City/State)