



## Firearms Examination Test No. 16-526 Summary Report

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This test was sent to 412 participants. Each sample set consisted of three known expended bullets (Item 1) test-fired from a suspect weapon and four questioned expended bullets (Items 2-5). Participants were requested to examine these items and report their findings. Data were returned from 376 participants (91% response rate) and are compiled into the following tables:

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

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

## **Manufacturer's Information**

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Each sample set contained five items: Item 1 consisted of three bullets fired in the suspect's firearm. Item 2 (recovered from the victim) and Items 3, 4 and 5 (recovered from the scene) each consisted of one bullet recovered from the scene. Winchester Train & Defend .380 Auto 95 grain FMJ ammunition was used for all five items. Participants were requested to determine which, if any, of the recovered questioned bullets (Items 2-5) were fired from the same firearm as the known bullets (Item 1).

The bullets in Items 1, 2, 3 and 5 were fired in a Colt MK IV Series 80 Mustang .380 Auto handgun (Serial number MU12363). Item 4 was fired in a Hi-Point Model CF .380 ACP handgun (Serial number P731125).

ITEMS 1, 2, 3 and 5 (IDENTIFICATION): Multiple magazines were loaded with ammunition totaling 120 rounds in preparation for firing into a water recovery tank with the Colt MK IV Series 80 Mustang .380 Auto handgun. After the ammunition was expended, the bullets were collected and packaged together as a batch in zip top bags. This process was repeated until the required number was produced. Out of each batch, the necessary number of bullets were selected and inscribed with a "1" (three bullets), "2" (one bullet), "3" (one bullet) and a "5" (one bullet), then sealed into their respective jewel boxes and kept together as an association batch.

ITEMS 4 (ELIMINATION): Multiple magazines were loaded with ammunition totaling 120 rounds in preparation for firing into a water recovery tank with the Hi-Point Model CF .380 ACP handgun. After the ammunition was expended, the bullets were collected and packaged together as a batch in zip top bags. This process was repeated until the required number was produced. Out of each batch, the necessary number of bullets were selected and inscribed with a "4" (one bullet), then sealed into their respective jewel boxes.

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

VERIFICATION: During test production, 10% of the bullets from each batch were selected and intercompared to confirm that markings were consistent within each batch. Laboratories that conducted the predistribution examination of the completed sample sets reported the expected identifications and eliminations.

*Release Date of Manufacturer's Information: 15-August-2016*

## **Summary Comments**

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This test was designed to allow participants to assess their proficiency in a comparison of expended bullets. Participants were provided with four questioned expended Winchester Train & Defend .380 Auto 95 grain FMJ bullets (Items 2-5) which they were requested to compare with three known expended bullets (Item 1) of the same manufacturer fired in the suspect's weapon, a Colt MK IV Series 80 Mustang .380 Auto handgun. For each sample set, Items 2, 3 and 5 bullets were fired in the same firearm as the Item 1 known bullets. The Item 4 bullet was fired in a different firearm from that which discharged the known expended bullets (Item 1). (Refer to Manufacturer's Information for preparation details.)

In Table 1 Response Summary, 347 of 376 (92%) responding participants identified Items 2, 3 and 5 and either eliminated or reported Inconclusive for Item 4 as having been fired from the same firearm as the Item 1 test-fired bullets. Twelve participants were inconclusive to Items 2, 3 and 5 and eliminated Item 4 as having been fired from the same firearm as the Item 1 test-fired bullets. Seven participants identified items 3 and 5 and either eliminated or reported inconclusive for Items 2 and 4 as having been fired from the same firearm as the Item 1 test-fired bullets. Four participants identified items 2 and 3 and either eliminated or reported inconclusive for Items 4 and 5 as having been fired from the same firearm as the Item 1 test-fired bullets. Two participants identified item 2 and either eliminated or reported inconclusive for Items 3, 4 and 5 as having been fired from the same firearm as the Item 1 test-fired bullets. Two participants identified items 2 and 5 and either eliminated or reported inconclusive for Items 3 and 4 as having been fired from the same firearm as the Item 1 test-fired bullets. Two participants did not have a response for Items 2, 3 and 5 and eliminated Item 4 as having been fired by the same firearm as the Item 1 test-fired bullets.

# Examination Results

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

TABLE 1

WebCode	Item 2	Item 3	Item 4	Item 5	WebCode	Item 2	Item 3	Item 4	Item 5
268MRJ	Yes	Yes	No	Yes	3XKHV2	Yes	Yes	No	Yes
27M92L	Yes	Yes	No	Yes	42K686	Yes	Yes	No	Yes
28FY8Z	Inc	Inc	No	Inc	47QKRL	Yes	Yes	No	Yes
28GPNG	Yes	Yes	No	Yes	4948E8	Yes	Yes	No	Yes
2CCE6N	Yes	Yes	No	Yes	4JKRX4	Yes	Yes	No	Yes
2HEQ2K	Yes	Yes	No	Yes	4X2MEZ	Yes	Yes	No	Yes
2HEQYZ	Yes	Yes	No	Yes	66X64V	Yes	Yes	No	Yes
2LFR43	Yes	Yes	No	Yes	69CLDZ	Yes	Yes	No	Yes
2R4C8J	Yes	Yes	No	Yes	6BPCL6	Yes	Yes	No	Yes
2Y6QU6	Yes	Yes	No	Yes	6DFB69	Yes	Yes	No	Yes
34E4C4	Yes	Yes	No	Yes	6KBD6Y	Yes	Yes	No	Yes
38FCGE	Yes	Yes	No	Yes	6UT4FP	Yes	Yes	No	Yes
38RXZN	Yes	Yes	No	Yes	6VPCTF	Yes	Yes	No	Yes
3AFKJ4	Yes	Yes	No	Yes	6WLVUG	Yes	Yes	No	Yes
3GX6FN	Yes	Yes	No	Yes	6XV4FM	Yes	Yes	No	Yes
3HXU9L	Yes	Yes	No	Yes	72AYWK	No	Yes	No	Yes
3J9VWJ	Yes	Yes	No	Yes	73NCQ9	Yes	Yes	No	Yes
3JN4XT	Yes	Yes	No	Yes	7CFU3W	Yes	Yes	No	Yes
3VEZVK	Yes	Yes	No	Yes	7E7WB6	Yes	Yes	No	Yes
3WC7FK	Yes	Yes	No	Yes	7G2WXF	Yes	Yes	No	Yes
3WWVN8	Yes	Yes	No	Yes	7MUWGG	Yes	Yes	No	Yes

TABLE 1

WebCode	Item 2	Item 3	Item 4	Item 5	WebCode	Item 2	Item 3	Item 4	Item 5
7P4UWJ	Yes	Yes	No	Yes	9EV2HA	Yes	Yes	No	Yes
7QU6KR	Yes	Yes	No	Yes	9FLC7G	Yes	Yes	No	Yes
7VMB2E	Yes	Yes	No	Yes	9GKAM4	Yes	Yes	No	Yes
7W3JB3	Yes	Yes	No	Yes	9RYC3B	Yes	Yes	No	Yes
7XUF2H	Yes	Yes	No	Yes	9V6TKE	Yes	Yes	No	Yes
7YKQQP	Yes	Yes	No	Yes	9YZLFU	Yes	Yes	No	Yes
832ABJ	Yes	Yes	No	Yes	9ZE72D	Yes	Yes	No	Yes
84EXX6	Yes	Yes	No	Yes	A6ZK7B	Yes	Yes	No	Yes
89V3RT	Yes	Yes	No	Yes	A8LC8E	Yes	Yes	No	Yes
8A6883	Yes	Yes	No	Yes	A939YE	Yes	Yes	No	Yes
8CUFCX	Yes	Yes	No	Yes	AF7449	Yes	Yes	No	Yes
8D6J33	Yes	Yes	No	Yes	AJ27KT	Yes	Yes	No	Yes
8FCXA9	Yes	Yes	No	Yes	AJ3VQB	Yes	Yes	No	Yes
8FR7BW	Yes	Yes	No	Yes	AQHPRY	Yes	Yes	No	Yes
8FUR9X	Yes	Yes	No	Yes	ARWWDG	Yes	Yes	No	Yes
8GYN9R	Yes	Yes	No	Yes	B64349	Yes	Yes	No	Yes
8HXNBD	Yes	Yes	No	Yes	B6G3FA	Yes	Yes	No	Yes
8N3JF8	Yes	Yes	No	Yes	B8MJVT	Yes	Yes	No	Yes
8PYYQJ	Inc	Inc	No	Inc	B8PVUH	Yes	Yes	No	Yes
8QC926	Yes	Yes	No	Yes	BA6MJP	Yes	Yes	No	Yes
8QNAEQ	Yes	Yes	No	Yes	BADHDX	Yes	Yes	No	Yes
94DKP3	Yes	Yes	No	Yes	BB27KQ	Yes	Yes	No	Yes
9693Q4	Yes	Yes	No	Yes	BJYMKW	Yes	Yes	No	Yes

TABLE 1

WebCode	Item 2	Item 3	Item 4	Item 5	WebCode	Item 2	Item 3	Item 4	Item 5
BKQRQP	Yes	Yes	No	Yes	DMNR4R	Yes	Yes	No	Yes
BL4EBP	Yes	Yes	No	Yes	DMTCTF	Yes	Yes	No	Yes
BLM83L	Yes	Yes	No	Yes	DT2QJQ	Yes	Yes	No	Yes
BMCG9G	Yes	Yes	No	Yes	DVKM4B	Yes	Yes	No	Yes
BNRZTE	Yes	Yes	No	Yes	DWEDAP	Inc	Inc	No	Inc
BP4Q7P	Yes	Yes	No	Yes	DY4ZNY	Inc	Yes	No	Yes
BUG4D4	Yes	Yes	No	Yes	DYZHJ9	Yes	Yes	No	Yes
BWK9FQ	Yes	Yes	No	Yes	E64NU6	Yes	Yes	No	Yes
C8YFZX	Yes	Yes	No	Yes	E8VKLJ	Yes	Yes	No	Yes
CCQRQM	Yes	Yes	No	Yes	EA4KTC	Yes	Yes	No	Yes
CHKJ8W	Yes	Yes	No	Yes	EC7LT9	Yes	Yes	No	Yes
CHMAFZ	Yes	Yes	No	Yes	ECA7HX	Yes	Yes	No	Yes
CJR4P6	Yes	Yes	No	Yes	ECPEJK	Yes	Yes	Inc	Yes
CQVTMD	Yes	Yes	No	Yes	EDWWGG	Yes	Yes	No	Yes
CYLJYW	Yes	Yes	No	Yes	EJN3X4	Yes	Yes	No	Inc
CYN4YT	Yes	Yes	No	Yes	ELW7Y8	Yes	Yes	No	Yes
CZH32Y	Yes	Yes	No	Yes	ELYW6P	Yes	Yes	No	Yes
D2VWED	Yes	Yes	No	Yes	EMMGME	Yes	Yes	No	Yes
D76AWC	Yes	Yes	No	Yes	EPCQTA	Yes	Yes	No	Yes
DEVJGF	Yes	Yes	No	Yes	EQQ4MX	Yes	Yes	No	Yes
DG8AUP	Yes	Yes	No	Yes	ER3ZT3	Yes	Yes	No	Yes
DHWCF	Yes	Yes	No	Yes	ETPQRL	Yes	Yes	No	Yes
DMAGAT	Yes	Yes	No	Yes	EXLE79	Yes	Yes	No	Yes

TABLE 1

WebCode	Item 2	Item 3	Item 4	Item 5	WebCode	Item 2	Item 3	Item 4	Item 5
F27AYR	Yes	Yes	No	Yes	GJWYFD	Yes	Yes	No	Yes
F2YF6K	Yes	Yes	No	Yes	GL7VBH	Yes	Yes	No	Yes
F3EP7X	Yes	Yes	No	Yes	GMGXY3	Yes	Yes	No	Yes
F6ZF83	Yes	Yes	No	Yes	GNCDBY	Yes	Yes	No	Yes
FBT9QX	Yes	Yes	No	Yes	GQFBLR	Yes	Yes	No	Yes
FH7JG4	Yes	Yes	No	Yes	GYTEF8	Yes	Yes	No	Yes
FHK3B9	Yes	Yes	No	Yes	H4J2WY			No	
FQ4289	Yes	Yes	No	Yes	H6DK37	Yes	Yes	No	Yes
FRGPUU	Yes	Yes	No	Yes	H8YDTF	Yes	Yes	No	Yes
FW9TMX	Yes	Yes	No	Yes	H9CXLP	Yes	Yes	No	Yes
FWCDB2	Yes	Yes	No	Yes	H9T4X9	Yes	Yes	No	Yes
FX8Y4T	Yes	Yes	No	Yes	HE466X	Yes	Yes	No	Yes
FXY4AK	Inc	Inc	No	Inc	HPV4K3	Yes	Yes	No	Yes
G23ACX	Inc	Inc	No	Inc	HR7UZY	Yes	Yes	No	Yes
G3XTEY	Yes	Yes	No	Yes	HUTK23	Yes	Yes	No	Yes
G4M2JT	Yes	Yes	No	Yes	HYQUEQ	Yes	Yes	No	Yes
G7BTBQ	Yes	Yes	No	Yes	HYTJMT	Yes	Yes	No	Yes
GANMYA	Yes	Yes	No	Yes	J29MH4	Yes	Yes	No	Yes
GB87B9	Yes	Yes	No	Yes	J74793	Yes	Yes	No	Yes
GCFA6K	Yes	Yes	No	Yes	J77VFK	Yes	Yes	No	Yes
GCKQ3J	Yes	Yes	No	Yes	J78PW6	Inc	Yes	No	Yes
GCVTPH	Yes	Yes	No	Yes	J9PYZB	Yes	Yes	No	Yes
GHKFBB	Yes	Yes	No	Yes	JBURP4	Yes	Yes	No	Yes

TABLE 1

WebCode	Item 2	Item 3	Item 4	Item 5	WebCode	Item 2	Item 3	Item 4	Item 5
JCRWB4	Yes	Yes	No	Yes	KMNBWL	Yes	Yes	No	Yes
JPHJQ	Inc	Inc	No	Inc	KX8PW4	Yes	Yes	No	Yes
JKMZCF	Yes	Yes	No	Yes	KYXZLB	Yes	Yes	No	Yes
JLW6P4	Yes	Yes	No	Yes	L2NAJJ	Yes	Yes	No	Yes
JMQVWH	Yes	Yes	No	Yes	L7XMA6	Yes	Yes	No	Yes
JPVD3Q	Yes	Yes	No	Yes	LAGRUL	Inc	Inc	No	Inc
JRJUCY	Yes	Yes	No	Yes	LAYXWV	Yes	Yes	No	Yes
JTDKHD	Yes	Yes	No	Yes	LCEHPY	Yes	Yes	No	Yes
JWG4Q8	Yes	Yes	No	Yes	LJLWJG	Yes	Yes	No	Yes
JX8EFE	Yes	Yes	No	Yes	LJXKW2	Yes	Yes	No	Yes
JXT4M2	Yes	Inc	No	Inc	LND43P	Yes	Yes	No	Yes
JXVTUK			No		LNWMC3	Yes	Yes	No	Yes
K2M9R7	Yes	Yes	No	Yes	LNVDHK	Yes	Yes	No	Yes
K33G6Z	Yes	Yes	No	Yes	LNZ82Q	Yes	Yes	No	Yes
K4P86J	Yes	Yes	No	Yes	LPMXZA	Yes	Yes	No	Yes
K94T2X	Yes	Yes	No	Yes	LRC876	Yes	Yes	No	Yes
K9NLRA	Yes	Yes	No	Yes	LT82T2	Inc	Inc	No	Inc
KAU4Q6	Inc	Yes	No	Yes	LUWBH9	Yes	Yes	No	Yes
KBQJ32	Yes	Yes	No	Yes	LVTRU7	Yes	Yes	No	Yes
KBU28R	Yes	Yes	No	Yes	LW7CP2	Yes	Yes	No	Yes
KC8QCP	Yes	Yes	No	Yes	LXWMD9	Yes	Yes	No	Yes
KKG67E	Yes	Yes	No	Yes	LYR6FA	Yes	Yes	No	Yes
KLAX2X	Yes	Yes	No	Inc	M6JMHT	Yes	Yes	No	Yes



TABLE 1

WebCode	Item 2	Item 3	Item 4	Item 5	WebCode	Item 2	Item 3	Item 4	Item 5
M79WMM	Yes	Yes	No	Yes	PTFCYV	Yes	Yes	No	Yes
M93HKK	Yes	Yes	No	Yes	PTH27E	Yes	Yes	No	Yes
MACR8Q	Yes	Yes	No	Yes	PV26Q6	Yes	Yes	No	Yes
ME6RPR	Yes	Yes	No	Yes	PWWUX	Yes	Yes	No	Yes
MV7MV4	Yes	Yes	No	Yes	Q27W2M	Yes	Yes	No	Yes
MVCTJT	Yes	Yes	No	Yes	Q6KRGK	Yes	Yes	No	Yes
MYCWEM	Yes	Yes	No	Yes	QAVUGU	Yes	Yes	No	Yes
MZK9TH	Yes	Yes	No	Yes	QEAH4D	Yes	Yes	No	Yes
N4KWPJ	Yes	Yes	No	Yes	QGK8K4	Yes	Yes	No	Yes
NMEDB2	Yes	Yes	No	Yes	QHUCXR	Yes	Yes	No	Yes
NPLV8B	Yes	Yes	No	Yes	QQLUCZ	Yes	Yes	No	Yes
NPZ73A	Yes	Yes	No	Yes	QTVUFM	Yes	Yes	No	Yes
NWDHU2	Yes	Yes	No	Yes	QU6X7R	Yes	Yes	No	Yes
NWL8F2	Yes	Yes	No	No	QU7MN4	Yes	Yes	No	Yes
NXAX8X	Yes	Yes	No	Yes	QWD2VA	Yes	Yes	No	Yes
NZ739L	Yes	Yes	No	Yes	QZBEYL	Yes	Yes	No	Yes
P2RBRL	Yes	Yes	No	Inc	R2MED8	Yes	Yes	No	Yes
P9P6JR	Yes	Yes	No	Yes	R439PY	Yes	Yes	No	Yes
PBW8PW	Inc	Yes	No	Yes	R49ECN	Yes	Yes	No	Yes
PEG3HG	Yes	Yes	No	Yes	R63ZAL	Yes	Yes	No	Yes
PN429M	Yes	Yes	No	Yes	R88T2Y	Yes	Yes	No	Yes
PN7XFC	Yes	Yes	No	Yes	R8PQ96	Yes	Yes	No	Yes
PRZ2WW	Yes	Yes	No	Yes	R8RAFF	Yes	Yes	No	Yes

TABLE 1

WebCode	Item 2	Item 3	Item 4	Item 5	WebCode	Item 2	Item 3	Item 4	Item 5
RAW4Q7	Yes	Yes	No	Yes	TMZRHZ	Inc	Yes	No	Yes
RC6AC8	Yes	Yes	No	Yes	TP693P	Yes	Yes	No	Yes
RDYZHL	Yes	Yes	No	Yes	TT4V4T	Yes	Yes	No	Yes
RETLFJ	Yes	Yes	No	Yes	TT6JXP	Yes	Yes	No	Yes
RGECE3	Yes	Yes	No	Yes	TVCY3A	Yes	Yes	No	Yes
RHQCBX	Yes	Yes	No	Yes	TVUUMW	Yes	Yes	No	Yes
RJ4YTC	No	Yes	No	Yes	TW7KXM	Yes	Yes	No	Yes
RJ6LKX	Yes	Inc	No	Inc	TY9H9E	Yes	Yes	No	Yes
RJNDLV	Yes	Yes	No	Yes	TYDZ8D	Yes	Yes	No	Yes
RKVKQ	Yes	Yes	No	Yes	TZ2ME8	Inc	Inc	No	Inc
RLA7C4	Yes	Yes	No	Yes	U7AYFE	Yes	Yes	No	Yes
RMK79Y	Yes	Yes	No	Yes	U7NNG7	Yes	Yes	No	Yes
RRCFJW	Yes	Yes	No	Yes	UBKCWD	Yes	Yes	No	Yes
RVV8UY	Yes	Yes	No	Yes	UEJQHG	Yes	Yes	No	Yes
RWPB6L	Yes	Yes	No	Yes	UFDCFE	Yes	Yes	No	Yes
RZUN8T	Yes	Yes	No	Yes	UHH2EG	Yes	Yes	No	Yes
T43J7M	Yes	Yes	No	Yes	UHY3EX	Yes	Yes	No	Yes
T4MCWY	Yes	Yes	No	Yes	UJDKKP	Yes	Yes	No	Yes
T7DCE4	Yes	Yes	No	Yes	UK94LQ	Yes	Yes	No	Yes
TB3YXF	Yes	Yes	No	Yes	ULYEBX	Yes	Yes	No	Yes
TDPPWY	Yes	Yes	No	Yes	UMENCC	Yes	Yes	No	Yes
TKEXRR	Inc	Inc	No	Inc	UW4AGA	Inc	Inc	No	Inc
TL4DR2	Yes	Yes	No	Yes	UWGV36	Yes	Yes	No	Yes

TABLE 1

WebCode	Item 2	Item 3	Item 4	Item 5	WebCode	Item 2	Item 3	Item 4	Item 5
VBG69Q	Yes	Yes	No	Yes	XL63XT	Yes	Yes	No	Yes
VEF9DR	Yes	Yes	No	Yes	XND6VB	Yes	Yes	No	Yes
VFCY8C	Yes	Yes	No	Yes	XPNWZL	Yes	Yes	No	Inc
VJMXCQ	Yes	Yes	No	Yes	XPU3NB	Yes	Yes	No	Yes
VRLEEH	Yes	Yes	No	Yes	XQ46EF	Yes	Yes	No	Yes
VWEJ4F	Yes	Yes	No	Yes	XRBJJ2	Yes	Inc	No	Yes
W7JR2R	Yes	Yes	No	Yes	XWQUW6	Yes	Yes	No	Yes
WAJ4XR	Yes	Yes	No	Yes	XXMLW	Yes	Yes	No	Yes
WDHDAF	Yes	Yes	No	Yes	XYCQAW	Yes	Yes	No	Yes
WHCJHP	Yes	Yes	No	Yes	Y3AG6F	Yes	Yes	No	Yes
WHVD87	Yes	Yes	No	Yes	Y3UDC9	Yes	Yes	No	Yes
WPDJ9J	Yes	Yes	No	Yes	Y7Q6HK	Yes	Yes	No	Yes
WQLMTV	Inc	Inc	No	Inc	YGC7ZF	Yes	Yes	No	Yes
WTBA4X	Yes	Yes	No	Yes	YGT3TF	Yes	Yes	No	Yes
WTT33L	Yes	Yes	No	Yes	YH8N3G	Yes	Yes	No	Yes
WX44AC	Yes	Inc	No	Yes	YNP7AW	Yes	Yes	No	Yes
WYYLL	Yes	Yes	No	Yes	YQLBD7	Yes	Yes	No	Yes
X2JYP9	Yes	Yes	No	Yes	YRRZC9	Yes	Yes	No	Yes
X6LWYF	Yes	Yes	No	Yes	YT6R7B	Yes	Yes	No	Yes
X9F37Q	Yes	Yes	No	Yes	YTMJDA	Yes	Yes	No	Yes
XFLKUJ	Yes	Yes	No	Yes	YUY62Q	Yes	Yes	No	Yes
XGG4WK	Yes	Yes	No	Yes	YVU2C6	Yes	Yes	No	Yes
XH8EKT	Yes	Yes	No	Yes	Z3MHH2	Yes	Yes	No	Yes

TABLE 1

WebCode	Item 2	Item 3	Item 4	Item 5	WebCode	Item 2	Item 3	Item 4	Item 5
Z6VLCD	Yes	Yes	No	Yes					
Z8FJHU	Yes	Yes	No	Yes					
Z9WMGF	Yes	Yes	No	Yes					
ZEHNDK	Yes	Yes	No	Yes					
ZFD8FL	Yes	Yes	No	Yes					
ZFW94A	Yes	Yes	No	Yes					
ZG7BUE	Yes	Yes	No	Yes					
ZJWKZA	Yes	Yes	No	Yes					
ZKAUDG	Yes	Yes	No	Yes					
ZRA7DJ	Yes	Yes	No	Yes					
ZTE3CT	Yes	Yes	No	Yes					
ZUE2TF	Yes	Yes	No	Yes					

<b>Response Summary</b>					<b>Participants: 376</b>
<i>Were any of the recovered questioned bullets (Items 2-5) fired in the same firearm as the known bullets (Item 1)?</i>					
<b>Responses</b>		<u>Item 2</u>	<u>Item 3</u>	<u>Item 4</u>	<u>Item 5</u>
	Yes	<b>355 (94.4%)</b>	<b>358 (95.2%)</b>	<b>0 (0.0%)</b>	<b>355 (94.4%)</b>
	No	<b>2 (0.5%)</b>	<b>0 (0.0%)</b>	<b>375 (99.7%)</b>	<b>1 (0.3%)</b>
	Inc	<b>17 (4.5%)</b>	<b>16 (4.3%)</b>	<b>1 (0.3%)</b>	<b>18 (4.8%)</b>
*Two participants had no response for Items 2, 3 and 5					

# Conclusions

TABLE 2

WebCode	Conclusions
268MRJ	Results of Examination: Examined the three specimens marked #2, #3, and #5. They weigh 95.4, 95.1, and 95.3 grains respectively and each indicates six lands and six grooves with a left hand twist. They are 38 caliber class discharged full metal jacketed bullets. Examined the specimen marked #4. It weight 95.1 grains and indicates nine lands and nine grooves with a left hand twist. It is a 38 caliber class discharged full metal jacketed bullet. The bullets marked #2, #3, and #5 were microscopically compared against the submitted test standards marked T1 through TB and were identified as having been discharged from the 380 Auto caliber Colt semiautomatic pistol. The bullet marked #4 was microscopically compared against the submitted test standards marked T1 through TB and was eliminated as having been discharged from the 380 Auto caliber Colt semiautomatic pistol due to the difference in general rifling characteristics.
27M92L	Items 2, 3 and 5 were fired from the firearm, Item 1. Item 4 was not fired from the firearm, Item 1.
28FY8Z	The three 38 caliber bullets (Items 2, 3 & 5) could not be conclusively identified or excluded from the test fired bullets (Item 1) fired from the Colt MK IV Series 80 Mustang 380 Auto pistol. There was agreement of all discernible class characteristics, but no significant agreement or disagreement of the individual characteristics was noted. The projectiles could have been fired from the firearm, or any other firearm with similar characteristics. The 38 caliber bullet (Item 4) was excluded from the test fired bullets (Item 1) fired from the Colt MK IV Series 80 Mustang 380 Auto pistol. Differences were found in characteristics sufficient to eliminate the firearm as the source of the projectile.
28GPNG	The bullets in Exhibits 1, 2, 3 and 5 were all fired from the same firearm. The bullet in Exhibit 4 was not fired from the same firearm as the bullets in Exhibits 1, 2, 3 and 5. The bullet has design features consistent with bullets loaded in 380 Auto caliber cartridges and displays rifling characteristics similar to pistols by Hi-Point.
2CCE6N	1. The exhibit fired bullets items 2, 3, and 5 were identified within the limits of practical certainty as having been fired from the exhibit Colt MK iv series 80 Mustang 380 Auto calibre pistol. 2. Item 4 was eliminated as having been fired from the exhibit Colt MK iv series 80 Mustang 380 Auto calibre pistol.
2HEQ2K	The 01-AB (Item 2), 01-AC (Item 3), and 01-AE (Item 5) bullets were microscopically compared to the 01-AA (Item 1) bullets with positive results. The 01-AB (Item 2), 01-AC (Item 3), and 01-AE (Item 5) bullets were fired through the barrel of the same firearm as the 01-AA (Item 1) bullets. The 01-AD (Item 4) bullet was eliminated as having been fired through the barrel of the same firearm as the 01-AA (Item 1) bullets.
2HEQYZ	Exhibits #2, #3, and #5 were fired from the same firearm as the Exhibit #1A - #1C tests. Exhibit #4 was not fired from the same firearm as the Exhibit #1A - #1C tests. This bullet has design features consistent with bullets loaded in 380 Auto caliber cartridges and displays rifling characteristics similar to pistols by Hi-Point Firearms, among possible others.
2LFR43	Items 2, 3, and 5 were fired in the same firearm as Item 1 (identification). This conclusion was verified by Firearms Examiner [Name]. Item 4 was not fired in the same firearm as Item 1 (elimination). This conclusion was verified by Firearms Examiner [Name].
2R4C8J	Laboratory Items 001.B (Item 2), 001.C (Item 3), and 001.E (Item 5) fired bullets are identified as being fired by the recovered Colt MK IV Series 80 Mustang .380 Auto handgun that fired the three submitted test fired bullets, Laboratory Item 001.A (Item 1). The items are identified as

TABLE 2

WebCode	Conclusions
	to sharing a common source because there is agreement of all discernible class characteristics and sufficient agreement of a combination of individual characteristics where the extent of agreement exceeds that which can occur in the comparison of toolmarks made by different tools and is consistent with the agreement demonstrated by toolmarks known to have been produced by the same tool. Laboratory Item 001.D (Item 4) fired bullet is eliminated as being fired by the recovered Colt MK IV Series 80 Mustang .380 Auto handgun that fired the three submitted test fired bullets, Laboratory Item 001.A (Item 1). The items are eliminated as to sharing a common source, because there is significant disagreement of discernible class characteristics.
2Y6QU6	Examinations showed Items 2(M-1), 3(M-2) and 5(M-4) were discharged from the Colt MK IV, Series 80 Mustang .380 Auto pistol. Examinations showed Item 4(M-3) was not discharged from the Colt MK IV, Series 80 Mustang .380 Auto pistol due to differences in class characteristics.
34E4C4	Examinations showed Items 2, 3, and 5 were discharged from the same firearm as Item 1. Examinations showed Item 4 was not discharged from the same firearm as Item 1.
38FCGE	Projectiles A, B, and D were fired in the same firearm as Item 1, the submitted .380 Auto Colt pistol, model MK IV Series 80. Projectile C was fired in a second .380 Auto firearm based on differences in class characteristics. Suspect weapons include .380 Auto Hi-Point pistols; however, any suspect weapon should be submitted for examination.
38RXZN	Bullets marked 2, 3 and 5 were fired from the same firearm.
3AFKJ4	Item 2, Item 3, Item 5 were fired from Item 1. Item 4 was not fired from Item 1, different LAG characteristics
3GX6FN	Bullets marked 2, 3 and 5 were fired from the same firearm with the tests. Bullet marked 4 was fired from second firearm.
3HXU9L	Items 2,3, and 5 were microscopically examined and were determined to have been fired by the Colt model pistol, Item 1, firearm #1. Item 4 was microscopically examined and was determined to have not been fired by the Colt model pistol, item 1.
3J9VWJ	Bullet Analysis: Items 1A, 1B, 1C, 2, 3, 4 and 5 are .38 caliber class bullets based upon the diameter. Opinion/Interpretation: Items 1A, 1B, 1C, 2, 3, 4 and 5 are consistent with bullets loaded in .380 Auto caliber cartridges based upon the weight and style. Item 4, the bullet, exhibits characteristics found in (but not limited to) the following firearms: Hi-Point .380 Auto caliber firearms. Methodology - Comparison Microscope: Items 1A, 1B and 1C, the bullets identified to have been fired from the recovered firearm, were fired through the barrel of the same firearm based upon corresponding class and individual microscopic characteristics. Items 2, 3 and 5, the bullets, were fired through the barrel of the same firearm as items 1A, 1B and 1C, the bullets identified to be test fired from the recovered firearm, based upon corresponding class and individual microscopic characteristics. Item 4, the bullet, was not fired through the barrel of the same firearm as Items 1A, 1B and 1C, the bullets identified to be test fired from the recovered firearm, based upon different class characteristics.
3JN4XT	The bullets marked 1, 2, 3 and 5 were fired in the recovered firearm (know). The bullet marked 4 was fired in a second, unknown firearm.
3VEZVK	The test fired bullets in item 001A were examined in conjunction with the bullets in items 001B, 001C, 001D, and 001E. Based on these microscopic examinations it was determined that: The bullets in items 001B, 001C, and 001E were identified as having been fired in the same firearm as the bullets in item 001A. The bullet in item 001D was excluded as having been fired

TABLE 2

WebCode	Conclusions
	in the same firearm as the bullets in item 001A.
3WC7FK	Items 2, 3, 4, and 5 were individually examined and the following noted: Item 2 (labeled hereafter as QB2) – one (1) fired, nominal .38 caliber, copper jacketed lead bullet with 6L conventional rifling characteristics and weighing 95.05 gr. Item 3 (labeled hereafter as QB3) – one (1) fired, nominal .38 caliber, copper jacketed lead bullet with 6L conventional rifling characteristics and weighing 95.05 gr. Item 4 (labeled hereafter as QB4) – one (1) fired, nominal .38 caliber, copper jacketed lead bullet with 9L conventional rifling characteristics and weighing 95.50 gr. Item 5 (labeled hereafter as QB5) – one (1) fired, nominal .38 caliber, copper jacketed lead bullet with 6L conventional rifling characteristics and weighing 95.00 gr. QB2-QB5 were microscopically inter-compared. It is the opinion of this examiner that QB2, QB3, and QB5 were fired by the same firearm. QB4 is excluded as being fired by the same firearm as QB2, QB3, and QB5. See photos for areas of comparison. QB2-QB5 were then microscopically compared to the three (3) fired bullets submitted as Item 1. It is the opinion of this examiner that QB2, QB3, and QB5 were fired by the same firearm as that which fired the three (3) fired bullets submitted as Item 1. QB4 is excluded as having been fired by the same firearm as Item 1. See photos for areas of comparison.
3WVVN8	Examinations showed Items 2, 3 and 5 were discharged from the same firearm as Item 1. Examinations showed Item 4 was not discharged from the same firearm as Item 1.
3XKHV2	The Exhibit #2, #3, #4 and #5 bullets were microscopically compared with tests (Exhibits #T1-1, #T2-1, and #T3-1) fired from the Exhibit #1 firearm. Exhibits #2, #3, and #5 were fired from the Exhibit #1 firearm. Exhibit #4 was fired from a second unknown firearm. Exhibit #4 has design features consistent with bullets loaded in 380 Auto caliber cartridges and displays rifling characteristics similar to firearms by Hi-Point Firearms, among possible others.
42K686	Items 2, 3, and 5 (fired metal jacketed bullets) are identified as having been fired by the .380 Auto caliber, Colt, model MK IV Series 80 Mustang, semiautomatic pistol (item 1). Item 4 (fired metal jacketed bullet) is eliminated as having been fired by the .380 Auto caliber, Colt, model MK IV Series 80 Mustang, semiautomatic pistol (item 1). There are differences in class characteristics (number of lands and grooves). Item 4 is consistent with being a .380 Auto caliber fired metal jacketed bullet displaying conventional rifling specifications of nine lands and grooves with a left twist. These specifications are characteristic of firearms manufactured by Hi-Point. However, no suspected firearm should be overlooked.
47QKRL	The Colt pistol, specimen #1, was test fired using material from the laboratory collection and was found to be operable and in good working order. The reference fired projectiles (Item #1) obtained were compared to the unknown caliber copper jacketed projectiles, Items #2 through #5. The following was determined: > Items #2, #3 and #5 were fired from the Colt pistol, specimen / Item #1. > Item #4 was consistent with .38 caliber class ammunition (which includes .380 auto and 9mm), possessed cut rifling and was fired from a different weapon than specimen / Item #1.
4948E8	The bullets Exhibits 2, 3 and 5 were identified as having been fired from the same firearm as the known test fires Exhibit 1. The bullet Exhibit 4 is 38 caliber class (380/9mm) and displays rifling characteristics similar to 380 Auto caliber firearms by Hi-Point. However, any suspect firearm should be considered for submission to this laboratory for examination. It was not fired from the same firearm as the known test fires Exhibit 1.
4JKRX4	The bullets from Items 2, 3, and 5 were microscopically compared with one of the test fired bullets from Item 1. Based on the agreement of all discernible class characteristics and a sufficient agreement of corresponding individual characteristics, they have been identified as having been fired from the Colt MK IV Series Mustang 380 AUTO semiautomatic pistol seized

TABLE 2

WebCode	Conclusions
	from the suspect's residence. The bullet from Item 4 exhibits different class (rifling) characteristics than the test fired bullets from Item 1. It was not fired from the seized Colt pistol.
4X2MEZ	Comparative examinations of Item 2 (bullet recovered from victim), Item 3 (first bullet recovered from wall) and Item 5 (bullet recovered from snack display) against Item 1 (three bullets test fired in the recovered pistol) showed the presence of matching features. This means that Items 1, 2, 3 and 5 were fired in the same firearm. Comparative examinations of Item 4 (second bullet from wall) against Item 1 showed the presence of different class characteristics. This means that Item 1 and Item 4 were fired in different firearms.
66X64V	Based on bullets individuals characteristics, the hypothesis that item 2,3,5 were fired by the recovered weapon is strongly supported. The hypothesis that item 4 was fired by a firearm different from the recovered weapon is strongly supported.
69CLDZ	The Exhibit #2, #3, and #5 bullets were fired from the same firearm that fired the Exhibit #1 (T1-T3) bullets. The Exhibit #4 bullet was not fired from the same firearm that fired the Exhibit #1(T1-T3) bullets. It is a 38 caliber class (380/9mm) and has design features consistent with bullets loaded in 380 Auto caliber cartridges. The bullet displays rifling characteristics similar to firearms by Hi-Point among others.
6BPCL6	Items 1, 2, 3, & 5 were fired from the same firearm. Item 4 was fired from a second firearm. This item is consistent with a .38 caliber projectile, typically loaded into 380 Auto or 9mm Luger ammunition. This item is conventionally rifled 9 Left, typical of, but not limited to, firearms manufactured by the following: Hi-Point.
6DFB69	Item 1 - three (3) Test fire bullets (caliber .380 Auto Colt semiautomatic pistol, model MK IV Series 80 Mustang) Item 2 - one (1) bullet Item 3 - one (1) bullet Item 4 - one (1) bullet Item 5 - one (1) bullet The submitted specimens marked as Items 2, 3 and 5 were examined and identified as three (3) fired caliber .380 Auto full metal copper jacketed bullets, with six (6) land and groove impressions, left twist. Items 2, 3, and 5 were microscopically compared to test bullets from Item 1. As a result of microscopic comparison it was concluded that Items 2, 3, and 5 were fired from the same firearm as test bullets from Item 1. The submitted specimen marked as Item 4 was examined and identified as a fired caliber .380 Auto/9mm Makarov full metal copper jacketed bullet, with nine (9) land and groove impressions, left twist. Item 4 was not fired from the same firearm as Items 2,3,5 or test bullets from Item 1, due to a difference in class characteristics. A list of possible firearms which may have produced impressions like those on Item 4 include but are not limited to caliber .380 Auto firearms marketed by Hi Point; caliber 9mm Luger firearms marketed by Hi Point.
6KBD6Y	The Item 2, 3, 4, and 5, fired, 380/9mm short caliber bullets and the test fires (Item 1) were examined and microscopically compared to each other with the following results: Items 2, 3, and 5 were identified as having been fired from the same firearm that produced the Item 1 test fired bullets. Item 4 was eliminated from having been fired from the same firearm as Items 2, 3 and 5 based on differences in class characteristics. Item 4 was fired from a second and unknown firearm.
6UT4FP	The bullets mentioned in 3.1 marked A, B and D were fired from the same firearm that fired the bullets mentioned in 3.1 marked TB1, TB2 and TB3. The bullet mentioned in 3.1 marked C was not fired from the same firearm that fired the bullets mention in 5.1
6VPCTF	1. The bullets described in item 1(know),2,3 and 5 are .380 caliber, metal case, with rifling to the left (L-6) and were fired by the same firearm. 2. The bullet described in item 4, is .380 caliber, metal case, with rifling to the left (L-9)an was fired by a firearm.
6WLVUG	3. On 2016-06-13 during the performance of my official duties I received a sealed evidence



TABLE 2

WebCode	Conclusions
	<p>bag with number PA4001418028 from Case Administration of the Ballistics Section, containing the following tests and exhibits: 3.1 Three (3) 9mm/.380 calibre fired test bullets marked "Item 1". 3.2 One (1) 9mm/.380 calibre fired bullet marked "Item 2". 3.3 One (1) 9mm/.380 calibre fired bullet marked "Item 3". 3.4 One (1) 9mm/.380 calibre fired bullet marked "Item 4". 3.5 One (1) 9mm/.380 calibre fired bullet marked "Item 5". 4. The intention and scope of this forensic examination comprises of the following: 4.1 The examination and identification of fired bullets. 4.2 Microscopic individualization of fired bullets. 5. I examined the fired bullets mentioned in paragraphs 3.1 to 3.5 and compared the individual and class characteristics markings on them using a comparison microscope and found: 5.1 The bullets mentioned in paragraphs 3.2, 3.3 and 3.5 were fired from the firearm that fired the test bullets mentioned in paragraph 3.1. 5.2 The bullet mentioned in paragraph 3.4 was not fired from the firearm that fired the bullets mentioned in paragraph 5.1.</p>
6XV4FM	<p>The questioned bullets Item 2, Item 3, Item 5 were fired with suspect's weapon. (Colt MK IV) (Item 1). The questioned bullet Item 4 wasn't fired with suspect's weapon.</p>
72AYWK	<p>The fired bullets specimens in Exhibits #2, #3, #4, and #5 were microscopically compared to the test fired bullet specimens in Exhibit #1. Based on similarities in both class and individual characteristics on Exhibit #3 and #5 with those on the test fired bullet specimens in Exhibit #1, it is the opinion of this examiner that the bullet specimens, Exhibit #3 and #5, were fired in the same firearm that fired the test specimens in Exhibit #1. Based on significant differences in individual characteristics on the fired bullet specimens in Exhibit #2 and #4, with those on the test fired bullet specimens in Exhibit #1, it is the opinion of this examiner that Exhibits #2 and #4 were not fired in the same firearm that fired the test specimens in Exhibit #1.</p>
73NCQ9	<p>Items 2, 3 and 5 were identified as having been fired in the firearm that fired the test fires in Item 1. Item 4 was excluded as having been fired in the firearm that fired the test fires in Item 1 based on differences in class characteristics. Item 4 is a 38 caliber class bullet fired in a firearm having nine lands and grooves with a left twist. Firearms having similar general rifling characteristics are manufactured or marketed by Hi-Point Firearms. This should not be construed as an all-inclusive list.</p>
7CFU3W	<p>Microscopic comparison was conducted with the following results: B1, B2 &amp; B4 were fired in Pistol P1. B3 was not fired in P1 due to difference in class characteristics (LAGS).</p>
7E7WB6	<p>Items #1, #2, #3, and #5 were microscopically examined and determined to be suitable for comparison due to the presence of sufficient class and individual characteristics. Item #4 was microscopically examined and determined to be suitable for comparison of class characteristics only, due to insufficient individual characteristics. Items #1, #2, #3, #4, and #5 were examined and found to be consistent with .380 caliber. Items #1, #2, #3, and #5 were microscopically examined and compared. Based on the observed agreement of their class characteristics and sufficient agreement of their individual characteristics, Items #1, #2, #3, and #5 are identified as having been fired from the same firearm. Item #1 and Item #4 were microscopically examined and compared. Based on the observed disagreement of class characteristics, Items #1 and #4 are eliminated as having been fired from the same firearm. Item #4 is consistent with having been fired from firearms manufactured by Hi-Point firearms. Laboratory reference files are not absolute; there may be weapons manufactured that do not appear herein.</p>
7G2WXF	<p>The reference projectiles fired from the Colt pistol, specimen #1, were compared to the copper jacketed projectiles, specimens #2 through #5. Microscopic examination revealed the following: Specimens #2, #3, and #5 were fired from the Colt pistol, specimen #1. Specimen #4 was not fired from the Colt pistol, specimen #1, due to a difference in the class</p>

TABLE 2

WebCode	Conclusions
	characteristics. Further examination revealed that specimen #4 was consistent with .38 caliber class ammunition (which includes .380 auto) and was fired from the barrel of a firearm that possessed nine lands and grooves with a left twist.
7MUWGG	The Item 2, 3, and 5 projectiles were identified, within the limits of practical certainty(1), as having been fired from the firearm represented by the Item 1 tests. The Item 4 projectile was NOT fired from the firearm represented by the Item 1 tests.
7P4UWJ	Item 1 consists of three bullets from a test fire of the firearm recovered on the crime scene. When the bullets from Item 1 were compared to the questioned bullets in Item 2, Item 3 and Item 5, fairly strong connecting agreements regarding details in tool marks were observed. The results from the examination support that the bullets in Item 1, Item 2, Item 3 and Item 5 have been shot through the same barrel (Level +2). When comparing the bullets in Item 1 to the questioned bullet in Item 4, substantially distinctive differences regarding details in tool marks were observed. The results from the examination support that the bullets in Item 1 and the bullet in Item 4 were not shot through the same barrel (Level -4).
7QU6KR	The items 2, 3 and 5 bullets were identified as having been fired from the same firearm as the item 1 bullets. The item 4 bullet was not fired from the same firearm as the item 1 bullets. The design features of the bullet are consistent with those loaded in 380 Auto caliber cartridges and displays rifling characteristics similar to firearms by Hi-Point.
7VMB2E	From the sample that had been received, it can be concluded that each bullet consists of .380 caliber ammunition and the rifling type for each bullet is "cut or button" which give the land and groove mark also the characteristics on the bullet for ballistic test. Three bullet in item 1 had the same characteristics and can be defined had been fired from the same gun which are Colt MK IV Series 80 Mustang handgun that had been recovered in the crime scene. The comparison between each bullet in item 1 and the bullet in item 2, 3 and 5 give the result that all bullet have same characteristics, therefore we can concluded that bullet in item 1, 2, 3 and 5 are been fired in the same fiream which are Colt MK IV Series 80 Mustang. The comparison between each bullet in item 1 and the bullet in item 4 give the result that bullet in item 4 did not have same characteristics with each bullet in item 1, which give the information another handgun been use in the case.
7W3JB3	The Items 2, 3, and 5 fired bullets were fired from the same firearm that produced the Items 1A through 1C test fires (380 Auto caliber, Colt MK IV Series 80 Mustang). The Item 4 fired bullet was fired from a second firearm. Item 4 is consistent with a 38 caliber bullet that is typically loaded in ammunition designated 9mm Luger or 380 Auto. Item 4 was fired by a firearm conventionally rifled 9 Left. A list of makes of firearms that may have fired Item 4 includes, but is not limited to: Hi-Point.
7XUF2H	The submitted fired bullets, Items 2, 3, and 5 were identified as having been fired from the same firearm which generated the test fires, Item 1. The submitted fired bullet, item 4, was eliminated as having been fired from the same firearm which generated the test fires, Item 1. This bullet is most consistent with bullets commonly loaded in .380 Auto caliber cartridge. Manufacturers of firearms known to exhibit similar General Rifling Characteristics (GRC's) include, but are not limited to: Hi-Point
7YKQQP	Items 2, 3 and 5 were fired by the Colt MK IV Series 80 Mustang .380 Auto handgun.
832ABJ	The projectiles from the scene (Items 2 through 5) were compared to the test fired projectiles (Item 1). Based on macroscopic and microscopic characteristics it was determined that Items 2, 3 and 5 were fired through the barrel of Item 1. Also, based on class characteristics, it was determined that Item 4 could not have been fired through the barrel of Item 1.

TABLE 2

WebCode	Conclusions
84EXX6	Exhibit 1 consists of three fired .380 Auto caliber copper jacketed bullets, reportedly fired from a Colt Mustang .380 Auto caliber pistol. Microscopic comparisons for reproducibility revealed, based on sufficient agreement of individual characteristics, that all three bullets were fired from the same barrel. Exhibit 2 is a fired .380 Auto caliber copper jacketed bullet rifled with six lands and grooves with a left twist. Exhibit 3 is a fired .380 Auto caliber copper jacketed bullet rifled with six lands and grooves with a left twist. Exhibit 4 is a fired .380 Auto caliber copper jacketed bullet rifled with nine lands and grooves with a left twist. Exhibit 5 is a fired .380 Auto caliber copper jacketed bullet rifled with six lands and grooves with a left twist. Physical and microscopic comparisons between one of the Exhibit 1 test fire bullets and the Exhibits 2, 3, 4 and 5 bullets revealed the following: Based on sufficient agreement of individual characteristics, Exhibits 2, 3 and 5 were fired from the same barrel as Exhibit 1. Based on a disagreement of class characteristics, Exhibit 4 was not fired from the same barrel as Exhibit 1. Firearms which may have fired Exhibit 4 include, but are not limited to, .380 Auto / 9mm Luger caliber pistols marketed by Hi-Point.
89V3RT	Exhibits #1A, #1B, #1C, #2, #3, and #5 were fired from the same firearm. Exhibit #4 was not fired from the same firearm as Exhibits #1A, #1B, #1C, #2, #3, and #5. Exhibit #4 is a .38 caliber class (.380/9mm) bullet and displays rifling characteristics similar to .380 Auto and 9mm Luger caliber firearms by High-Point Firearms.
8A6883	The Items 1,2,3, and 5 bullets matched each other and were discharged from the same firearm. the identifications were based on the agreement of individual characteristics observed during a microscopic comparison. The Item 4 bullet was eliminated as having been discharged from the firearm that discharged Items 1,2,3,and 5. The elimination was based on a disagreement of class characteristics.
8CUFCX	Items 2, 3 and 5 were after our investigations fired in Item 1. Item 4 was fired by another firearm due to different number of fields and grooves.
8D6J33	Items 2,3, and 5 were identified as having been discharged from the same firearm as Item 1. the identifications were based on the agreement of individual characteristics observed during microscopic comparison. Item 4 was eliminated as having been discharged from the same firearm as Item 1. The elimination was based on difference in class characteristics observed during a microscopic comparison.
8FCXA9	Projectiles A, B, and D (Items 2, 3 and 5) were fired in the submitted .380 Auto Colt MK IV Series 80 Mustang pistol, Item 1. Projectile C (Item 4) was fired in a second .380 Auto pistol. Suspect weapons include .380 Hi-Point pistols; however, any suspect weapon should be submitted to the lab for analysis.
8FR7BW	Items #2, #3 and #5 were fired from Item #1. Item #4 was not fired from Item #1. It is a 38 caliber class (380/9mm) bullet and has design features consistent with bullets loaded in .380 Auto caliber cartridges. Item #4 displays rifling characteristics similar to firearms by Hi-Point.
8FUR9X	Before examination the bullets recovered after a Shooting inside a convenience store were marked T1 (Item 2), T2 (Item 3), T3 (Item 4) and T4 (Item 5). The bullets that were fired using the suspects handgun were marked V1, V2 and V3. These bullets were compared using a Leica S6E Stereo Microscope and a Leica FSC comparison Microscope. The bullets bear appropriate marks that make them suitable for comparative Analysis. Identification of the firearm used, based on these marks, appears to be possible. Because of clear differences in the observed individual characteristics, the chance that the bullet T3 was fired from the suspects handgun is considered virtually non existent. Based on the observed similarities in the individual characteristics of the bullets T1, T2 and T4 compared to V1, V2 and V3 it is concluded that these bullets were fired from the suspect's firearm.

## TABLE 2

WebCode	Conclusions
8GYN9R	<p>Results of Examinations: Item 5 (contributor Item 1) consists of three bullets test fired from the barrel of a recovered .380 Auto caliber Colt pistol, Model Mustang MK IV Series 80. Item 6 (contributor Item 2), Item 7 (contributor Item 3), Item 8 (contributor Item 4), and Item 9 (contributor Item 5) are 9mm/.38 caliber jacketed bullets like those commonly loaded into .380 Auto caliber cartridges. Items 6, 7, and 9 were identified as having been fired from the same barrel as the Item 5 bullets. Item 8 was excluded as having been fired from the same barrel as Item 5 due to a difference in class characteristics. A check of the FBI Laboratory's General Rifling Characteristics (GRC) database produced a list of firearms with GRCs like those present on the Item 8 bullet that includes pistols marketed by Hi-Point. Methods: Bullets: Two bullets, either two evidence items or one evidence item and one bullet test fired in the Laboratory, undergo two stages of comparison. First, the bullets are examined to determine and compare their class characteristics. The class characteristics of fired bullets include diameter, number of land and groove impressions, direction of twist, and the widths of the land and groove impressions. If the class characteristics of the two bullets are not clearly different, the examination moves to a second stage using comparative microscopy. A microscopic comparison examination consists of a search of the striated marks present on two bullets to determine if patterns of similarity exist. At the completion of these comparisons, one of the following three opinions is issued: 1) Exclusion (Elimination): If two bullets have different class characteristics, an Exclusion opinion is rendered. Exclusion opinions based on a measured class difference or the physical comparison of a discernable difference in class characteristics cannot be reported unless a second qualified firearms/toolmarks Examiner has examined the items in question and reached the same conclusion. 2) Identification: If the following conditions are met during the comparison of microscopic marks, an opinion of Identification is rendered: a) The degree of similarity is greater than the Examiner has ever observed in previous evaluations of bullets known to have been fired from different barrels. b) The degree of similarity is equivalent to that normally observed in bullets known to have been fired from the same barrel. When these conditions are met the likelihood another tool (firearm) could have produced the same mark is so remote as to be considered a practical impossibility. An Identification opinion cannot be reported unless a second qualified firearms/toolmarks Examiner has examined the items in question and reached the same conclusion. 3) Inconclusive (No Conclusion): If the conditions required for an Exclusion or Identification are not observed, an opinion of Inconclusive is rendered. A failure to meet to the conditions for an Exclusion or Identification could be the result of limited microscopic marks of value, a lack of any observed microscopic similarity, or microscopic similarity that is present but too limited to meet the criteria for Identification. GRC: The appropriate GRC measurements are entered in the database, which then returns a list of all firearms in the database with compatible GRCs. Association: Association examinations compare the physical and class characteristics of evidence items. An association conclusion is reached if the observable or measurable physical dimensions and design features of two items are in agreement, or are "physically consistent". If these dimensions and features are clearly different, an elimination conclusion is reached. If there is a lack of observable design features or measurable dimensions, the result is inconclusive. Limitations: Bullets: Firearms/Toolmark Identification is an empirical science that relies on objective measurements and a subjective comparison of microscopic marks of value. Due to random changes in barrels such as wear, corrosion and lead accumulation, bullets fired from the same barrel are sometimes not identifiable as such. Additionally, some barrel manufacturing methods routinely produce barrels that leave limited microscopic marks of value on fired bullets. Damaged, corroded or fragmented bullets may be of little or no value for comparison purposes. GRC: The GRC database contains information obtained from firearms at the FBI Laboratory and from voluntary submissions of test-fired specimens from law enforcement agencies around the world. It is not a comprehensive list of all firearms, and</p>

TABLE 2

WebCode	Conclusions
	contains no information about the numbers of each type of firearm present in the general population. The firearms listed in the report are typically those considered to be more common and are included at the discretion of the examiner authoring the report. Association: Association examinations are used to determine if two items are from a restricted group source and cannot be used to determine whether two items are from a unique source.
8HXNBD	1. The three (3) bullets described in item 1 (Known), are .380 caliber, metal case, with rifling to the (L-6) and were fired by the same firearms. 2. The projectile describe in item 2, item 3, item 5, are .380 caliber, metal case, with rifling to the left(L-6) and were fired by the same firearm. 3. The firearms used to fire the tree bullets described in items 1, was not the firearms used to fired the projectiles described, in item 4. The conclusions are based by bullet examination, microscopic and microscopic comparison.
8N3JF8	Items 2, 3 and 5 were identified as having been fired from the same firearm as Item 1. Item 4 was eliminated as having been fired from the same firearm as Item 1.
8PYYQJ	I microscopically compared Items 2,3 and 5 recovered at the scene to test fires(Item 1) produced in the Colt MK1V handgun, examining both class and individual characteristics. I observed that there was agreement of all discernible class characteristics, but only minor agreement of the observed individual characteristics. Therefore I formed the opinion that Items 2, 3 & 5 could have been fired from this firearm, but that I could not exclude another firearm bearing the same class characteristics. I microscopically compared Item 4 recovered at the scene to test fires (Item 1) produced in the Colt MK1V handgun, comparing both class and individual characteristics. There was no agreement of the observed class characteristics and I therefore formed the opinion that Item 4 had not been discharged form this firearm.
8QC926	Item #2, Item #3 and Item #5 were fired from the same firearm as the Item #1 test fires - one (1) 380 Auto caliber Colt Model MKIV Series 80 Mustang handgun. Item #4 was fired from a second firearm. Item #4 is consistent with a 38 caliber bullet typically loaded in ammunition designated 380 Auto. Item #4 was fired by a firearm conventionally rifled 9-Left. A list of makes of firearms that could have fired Item #4 includes, but is not limited to, Hi-Point.
8QNAEQ	Items 2, 3, and 5 were identified as having been fired from the same firearm that fired the Item 1 bullets. Item 4 was not fired from the same firearm that fired Items 1, 2, 3, 4, and 5. the design features of Item 4 are consistent with bullets loaded in 380 Auto caliber ammunition and displays rifling characteristics similar to firearms by Hi-Point.
94DKP3	Exhibits 1A through 1C consist of three (3) 38 class copper jacketed bullets reportedly fired from a Colt MK IV Series 80 Mustang pistol rifled with six (6) lands and grooves and a left twist. The overall shape, size and physical features of these exhibits are consistent with caliber .380 Auto bullets. Exhibits 2, 3 and 5 consist of three (3) 38 class copper jacketed bullets, which were fired from a barrel rifled with six (6) lands and grooves and a left twist. The overall shape, size and physical features are consistent with caliber .380 Auto bullets. A microscopic examination was conducted between Exhibits 2, 3, 5 and 1A through 1C. There is agreement of all discernible class characteristics and sufficient agreement of individual characteristics to identify Exhibits 2, 3 and 5 as having been fired from the same firearm as the Exhibit 1 test fired bullets. Exhibit 4 is a 38 class copper jacketed bullet, which was fired from a barrel rifled with nine (9) lands and grooves and a left twist. The overall shape, size and physical features are consistent with caliber .380 Auto bullets. A microscopic examination was conducted between Exhibit 4 and 1A through 1C. Due to a difference in class characteristics, Exhibit 4 was eliminated as having been fired from the same firearm as the Exhibit 1 test fired bullets.
9693Q4	The 38 caliber class bullets (Items 2,3 and 5) were fired in the same firearm as Item 1. The remaining 38 caliber class bullet (Item 4) was not fired in the same firearm as Items 1,2,3, and

TABLE 2

WebCode	Conclusions
5	
9EV2HA	1) Exhibits 2 (One .380 metal jacketed bullet), 3 (One .380 metal jacketed bullet), 4 (One .380 metal jacketed bullet), and 5 (One .380 metal jacketed bullet) were visually examined and microscopically compared to Exhibit 1 (Three .380 metal jacketed bullets reported as being fired from a .380 Colt MK IV Series 80 Mustang pistol). a) the Exhibit 1 bullets and the Exhibits 2, 3, and 5 bullets were fired from the same firearm. b) the Exhibit 1 bullets and the Exhibit 4 bullet were not fired from the same firearm.
9FLC7G	Items 2, 3, 5, and the test fired bullets from the Colt semiautomatic pistol (Item 1) were microscopically examined and compared. Based on observed agreement of class characteristics and sufficient agreement of individual characteristics, the bullets were identified as having been fired from the Colt semiautomatic pistol. Item 4 and the test fired bullets from the Colt semiautomatic pistol (Item 1) were microscopically examined. Based on observed disagreement of class characteristics, Item 4 was eliminated as having been fired from the Colt semiautomatic pistol. Item 4 has physical and design characteristics consistent with being .38/.357/9mm caliber. Firearms that could have fired it include the following: Hi-Point, 380 Auto, semiautomatic pistols NOTE: This list should not be considered all-inclusive of all makes and/or models of firearms that could have possibly fired the listed bullet.
9GKAM4	Items 2, 3, and 5 were fired from the same firearm as Item 1. (reportedly fired from a .380 Auto caliber Colt model MK IV Series 80 Mustang pistol). Item 4 was not fired from the same firearm as Item 1. Item 4 is consistent with .380 Auto caliber and was fired from a firearm having nine lands and grooves with a left twist. A list of possible firearm manufacturers would include, but not limited to, the following: Hi-Point firearms.
9RYC3B	The bullets marked 222623/16 (2), (3) & (5) were fired from the same firearm that fired the bullets marked 623 TC1-TC2-TC3. The bullet marked 222623/16 (4) was not fired from the same firearm that fired the bullets marked 623 TC1-TC2-TC3.
9V6TKE	Items 2, 3, 4, and 5 are 38 caliber class bullets based upon the diameter. Opinion/ Interpretation: Items 2, 3, 4, and 5 are consistent with bullets loaded in .380 Auto caliber cartridges based upon the weight and style. Item 4, the bullet, exhibits characteristics found in (but not limited to) the following firearms: Hi-Point Firearms .380 Auto caliber firearms. Methodology-Comparison Microscopy: Items 2, 3, and 5, the bullets, were fired through the barrel of Item 1, the Colt pistol, based upon corresponding class and individual microscopic characteristics. Item 4, the bullet, was not fired through the barrel of Item 1, the Colt pistol, based upon different class characteristics.
9YZLFU	Based on the correspondence of class and individual characteristics, the bullets in Items 1-1, 1-2, 1-3, and 1-5 were determined to have been fired by the same firearm (Identification). Based on significant disagreement of class characteristics, the fired bullets, Items 1-1, 1-2, 1-3, and 1-5, could not have been fired from the same firearm as the fired bullet, Item 1-4 (Elimination). Based on the class characteristics displayed, possible firearms that could have fired the bullet in Item 1-4 include 380 Auto caliber Hi-Point brand pistols or any other firearm having similar caliber and class characteristics.
9ZE72D	Items 2, 3 and 5 were identified as having been fired from the same firearm as Item 1. Item 4 was eliminated as having been fired from the same firearm as Item 1. Item 4 is a nominal 38 caliber bullet and was fired from a firearm having nine lands and grooves with a left hand twist. Using the FBI's General Rifling Characteristics (GRC) database, a list of best possible source firearms was generated. The list is included with this report. This list is not all-inclusive and should only be considered an investigative lead. All suspect firearms should be submitted for comparison.

TABLE 2

WebCode	Conclusions
A6ZK7B	Items 001-2, 001-3, and 001-5 were all fired in the same firearm that fired Item 001-1. Item 001-4 was not fired in the same firearm that fired Item 001-1.
A8LC8E	The questioned bullets, that is, Item 2, Item 3 and Item 5, were discharged from the same firearm that was used to discharge the known bullets, that is, Item 1. The questioned bullet, that is, Item 4, was discharged from a different firearm than the one used to discharge the known bullets.
A939YE	The firearm that fired Item 1 test-fired bullets also fired Items 2, 3 and 5 bullets. The firearm that fired Item 1 test-fired bullets did not fire Item 4 bullet. This bullet is consistent with bullets commonly found loaded in 380 Auto caliber cartridges. See the attachment for a list of possible firearm manufacturers/origins that may have fired this projectile. Note that this list may not be all inclusive.
AF7449	Projectiles A, B and D were fired in the submitted .380 Auto Colt pistol, model MK IV Series 80 Mustang. Projectile C was fired in a second .380 Auto pistol. Suspect weapons include .380 Auto Hi-Point firearms; however, any suspect weapon should be submitted to the laboratory for analysis.
AJ27KT	The Item 1A, Item 1B, Item 1C, Item 2, Item 3, and Item 5 bullets were fired from the same firearm. They display rifling characteristics similar to 380 Auto caliber firearms by Colt and Smith & Wesson, among others. The Item 4 bullet was fired in a second firearm. It displays rifling characteristics similar to 380 Auto caliber firearms by Hi-Point, among possible others.
AJ3VQB	The pieces of evidence described in the item #1, item #2, item #3 and item #5, are bullets, .380 caliber, metal case type, with a left twist (L-6), and were fired by the same firearm. The piece of evidence described in the item #4, is a bullet, .380 caliber, metal case type, with a left twist (L-9), and was fired by a firearm.
AQHPRY	Item 1 - Three bullets fired using the recovered firearm (known). Item 2 - Bullet recovered from victim (questioned). Item 3 - First bullet recovered from the wall at the scene (questioned). Item 4 - Second bullet recovered from the wall at the scene (questioned). Item 5 - Bullet recovered from the snack display at the scene (questioned). Analysis Result: Sufficient agreements of class and individual characteristics confirmed the items 2, 3, and 5 expended bullets were all fired from the same firearm that fired the item 1 expended bullets. Disagreements of class characteristics confirmed the item 4 expended bullet was fired from a different firearm that fired the item 1 expended bullets. A GRC database search was conducted with the item 4 bullet. General rifling characteristics observed on the expended bullet was consistent with the rifling specifications used by Hi-Point. However, this should not be considered the only manufacturer/distributor and no suspect firearm should be eliminated.
ARWWDG	Items F1B, F1C, and F1E, The bullets, were fired through the same barrel as Item F1A1 based upon corresponding class and individual microscopic characteristics. Item F1D, the bullet, was not fired through the same barrel as item F1A1, based upon different class characteristics.
B64349	The Item 2, Item 3, and Item 5 bullets were fired from the Item 1 Colt handgun. The bullets were determined to be of 380 Auto caliber, displaying rifling characteristics of 6 lands and grooves, left twist. The Item 4 bullet was not fired from the Item 1 Colt handgun. The bullet was determined to be of 380/9mm caliber displaying rifling characteristics of 9 lands and grooves, left twist. A manufacturer of firearms with similar rifling characteristics includes, but is not limited to, Hi-Point Firearms.
B6G3FA	1. The bullets described in Items 1, 2, 3 and 5, are .380 caliber, metal case type, with left rifling (L-6), and were fired by the same firearm. 2. The bullet describe in item 4, is .380

TABLE 2

WebCode	Conclusions
	caliber, metal case type, with left rifling (L-9), and were fired by a firearm.
B8MJVT	A microscopic comparison was conducted with the following results: Bullets B-1, B-2 and B-4 (Items #2, #3 and #5 respectively) were fired from Pistol, P-1 (Item #1). Bullet, B-3 (Item #4) was not fired from Pistol, P-1 due to different class characteristics (LAG: 09L vs 06L).
B8PVUH	Microscopic comparisons of the bullets from Items #2, 3 and 5 with the test fired bullets from Item #1 revealed matching barrel engraved striations. This finding confirms that the bullets from Items #2, 3 and 5 and the test fired bullets from Item #1 were all fired from the same firearm. Microscopic comparisons of the bullet from Item #4 with the test fired bullets from Item #1 revealed different class characteristics (number of lands and grooves, land / groove widths). This finding confirms that the bullet from Item #4 and the test fired bullets from Item #1 were fired from different firearms. Based on the general rifling characteristics observed, the bullet from Item #4 is consistent with having been fired from a Hi-Point pistol, though other possibilities may exist.
BA6MJP	Item 1 consisted of three .380" ACP calibre bullets rifled 6L (controls). Items 2,3,4 and 5 each consisted of one .380" ACP calibre bullet (recovered from the scene). Items 2,3 and 5 were rifled 6L and item 4 was rifled 9L. Microscopic examination and comparison between the control bullets and the test bullets showed that items 2,3 and 5 all matched the controls in terms of gross marks, individual and consecutively matching striations. Item 4 did not match the controls and was differentiated on its gross characteristics. In my opinion, items 2,3 and 5, three fired .380" ACP calibre bullets, were discharged in the firearm which fired the control bullets (item 1). Item 4 was discharged in a second separate firearm, rifled 9L.
BADHDX	Item: 1 Three fired bullets, described as "...fired using the recovered firearm (known)". RESULTS: The three bullets submitted as Item 1 were physically examined and microscopically compared with each other. Matching individual identifying characteristics were found, and it was concluded that the Item 1 bullets were fired by one firearm. Item: 2 One fired bullet, described as "...recovered from victim (questioned)". Item: 3 One fired bullet, described as "...recovered from the wall at the scene (questioned)". Item: 4 One fired bullet, described as "...recovered from the wall at the scene (questioned)". Item: 5 One fired bullet, described as "...recovered from the snack display at the scene (questioned)". RESULTS: Items 2, 3, 4, and 5 were physically and microscopically examined. Where appropriate, these Items were microscopically compared with each other and with the Item 1 fired bullets. From these examinations and comparisons, the following conclusions were reached: Matching individual identifying characteristics were found, and it was concluded that Items 2, 3, and 5 were fired by the firearm that fired the Item 1 bullets. Item 4 was not fired by the firearm that fired the Item 1 bullets due to differences in class characteristics. Physical and microscopic examinations of Item 4 revealed that it was most consistent with bullets loaded into some 380 Auto caliber cartridges. Marks of value were found, and it was concluded that Item 4 may be suitable for identification with a specific firearm (barrel) and/or another fired bullet(s). Item 4 had been fired through a conventionally rifled barrel with nine grooves, left twist. Currently, the only known manufacturer of firearms with rifling specifications like those found on Item 4 is Hi-Point Firearms.
BB27KQ	MICROSCOPIC COMPARISON EXAMINATION OF EVIDENCE BULLETS ITEM 2 THROUGH ITEM 5 WITH TEST FIRED BULLETS FROM COLT MK IV .380 AUTO PISTOL REVEALED THAT ITEM 2, ITEM 3, AND ITEM 5 WERE FIRED WITH COLT MK IV .380 AUTO PISTOL. ITEM 4 WAS NOT FIRED WITH THE COLT MK IV .380 AUTO PISTOL DUE TO THE DIFFERENCE IN RIFLING CLASS CHARACTERISTICS (06L VS. 09L). SHOULD A SUSPECT FIREARM BE RECOVERED, PLEASE SUBMIT AND REFERENCE THE LISTED CC#.



TABLE 2

WebCode	Conclusions
BJYMKW	<p>Microscopic examination and comparison of the bullets in Items 1, 2, 3, 4, and 5 revealed that: A. The bullets in Items 1, 2, 3, and 5 had all been fired in the same firearm. B. Due to a difference in class characteristics, the bullet in Item 4 had not been fired in the same firearm as the bullets in Items 1, 2, 3, and 5. The 9-Left rifling characteristics present on the bullet in Item 4 are most common to 380 Auto and 9mm Luger caliber firearms manufactured by Hi-Point.</p>
BKQRQP	<p>Results of Examinations: Item 5 (contributor Item 1) consists of three bullets test fired from the barrel of a recovered .380 Auto caliber Colt pistol, Model Mustang MK IV Series 80. Item 6 (contributor Item 2), Item 7 (contributor Item 3), Item 8 (contributor Item 4), and Item 9 (contributor Item 5) are 9mm/.38 caliber jacketed bullets like those commonly loaded into .380 Auto caliber cartridges. Items 6, 7, and 9 were identified as having been fired from the same barrel as the Item 5 bullets. Item 8 was excluded as having been fired from the same barrel as Item 5 due to a difference in class characteristics. A check of the FBI Laboratory's General Rifling Characteristics (GRC) database produced a list of firearms with GRCs like those present on the Item 8 bullet that includes pistols marketed by Hi-Point. Methods: Bullets: Two bullets, either two evidence items or one evidence item and one bullet test fired in the Laboratory, undergo two stages of comparison. First, the bullets are examined to determine and compare their class characteristics. The class characteristics of fired bullets include diameter, number of land and groove impressions, direction of twist, and the widths of the land and groove impressions. If the class characteristics of the two bullets are not clearly different, the examination moves to a second stage using comparative microscopy. A microscopic comparison examination consists of a search of the striated marks present on two bullets to determine if patterns of similarity exist. At the completion of these comparisons, one of the following three opinions is issued: 1) Exclusion (Elimination): If two bullets have different class characteristics, an Exclusion opinion is rendered. Exclusion opinions based on measured class difference or the physical comparison of a discernable difference in class characteristics cannot be reported unless a second qualified firearms/toolmarks Examiner has examined the items in question and reached the same conclusion. 2) Identification: If the following conditions are met during the comparison of microscopic marks, an opinion of Identification is rendered: a) The degree of similarity is greater than the Examiner has ever observed in previous evaluations of bullets known to have been fired from different barrels. b) The degree of similarity is equivalent to that normally observed in bullets known to have been fired from the same barrel. When these conditions are met the likelihood another tool (firearm) could have produced the same mark is so remote as to be considered a practical impossibility. An Identification opinion cannot be reported unless a second qualified firearms/toolmarks Examiner has examined the items in question and reached the same conclusion. 3) Inconclusive (No Conclusion): If the conditions required for an Exclusion or Identification are not observed, an opinion of Inconclusive is rendered. A failure to meet to the conditions for an Exclusion or Identification could be the result of limited microscopic marks of value, a lack of any observed microscopic similarity, or microscopic similarity that is present but too limited to meet the criteria for Identification. GRC: The appropriate GRC measurements are entered in the database, which then returns a list of all firearms in the database with compatible GRCs. Association: Association examinations compare the physical and class characteristics of evidence items. An association conclusion is reached if the observable or measurable physical dimensions and design features of two items are in agreement, or are "physically consistent". If these dimensions and features are clearly different, an elimination conclusion is reached. If there is a lack of observable design features or measurable dimensions, the result is inconclusive. Limitations: Bullets: Firearms/Toolmark Identification is an empirical science that relies on objective measurements and a subjective comparison of microscopic marks of value. Due to random changes in barrels such as wear, corrosion and lead accumulation, bullets fired from the same barrel are sometimes not identifiable as such. Additionally, some barrel manufacturing methods</p>

TABLE 2

WebCode	Conclusions
	routinely produce barrels that leave limited microscopic marks of value on fired bullets. Damaged, corroded or fragmented bullets may be of little or no value for comparison purposes. GRC: The GRC database contains information obtained from firearms at the FBI Laboratory and from voluntary submissions of test-fired specimens from law enforcement agencies around the world. It is not a comprehensive list of all firearms, and contains no information about the numbers of each type of firearm present in the general population. The firearms listed in the report are typically those considered to be more common and are included at the discretion of the examiner authoring the report.
BL4EBP	The Ex 2, 3, and 5 bullets were fired from the same firearm as the Ex 1 bullets. The Ex 4 bullet was not fired from the same firearm as the Ex 1 bullets. It is a 38 caliber class (380/9mm) bullet and displays rifling characteristics similar to 380 Auto caliber pistols by Hi-Point Firearms, among possible others.
BLM83L	A microscopic examination and comparison of the evidence described above revealed the following: TEST FIRES (1.1-1.3) and BULLETS (2,3,5) are identified as having been discharged from the firearm identified above based on the observed agreement of their class characteristics and sufficient agreement of their individual characteristics. TEST FIRES (1.1-1.3) and BULLETS (2,3,5) are eliminated from BULLET (4) as having been discharged from the same firearm based on the observed disagreement of class characteristics.
BMCG9G	I microscopically examined item 1, the three test-fired bullets, and found the marks to be generally reproducible and sufficient for identification. I microscopically compared item 1 to items 2, 3, and 5 (three submitted bullets) and found all class characteristics to agree. I also found sufficient agreement for identification in the individual characteristics, including striations in the land impressions. I concluded that items 2, 3, and 5 were fired in the recovered firearm. I microscopically compared item 1 to item 4 (a submitted bullet) and found a class characteristic difference in the number of lands and grooves. I concluded item 4 had not been fired in the recovered firearm.
BNRZTE	Items 2, 3 and 5 are .38 caliber/9mm (which includes .380 Auto) full metal jacketed bullets that were identified as having been fired from the same barrel as the Item 1 bullets. Item 4 is a .38 caliber/9mm full metal jacketed bullet that is physically consistent with bullets typically loaded in .380 Auto caliber cartridges. The Item 4 bullet was fired from a barrel rifled with nine grooves, left twist, and was excluded as having been fired from the same barrel as the Item 1, 2, 3 and 5 bullets.
BP4Q7P	The Exhibit #2, #3, and #5 bullets were fired from the same firearm that fired the Exhibit #1A, #1B, and #1C bullets. The Exhibit #4 bullet was not fired from the same firearm that fired Exhibits #1A, #1B, #1C, #2, #3, and #5. It is 38 caliber class (38/357/380/9mm) and displays rifling characteristics similar to firearms by Hi-Point, among possible others.
BUG4D4	Items 2, 3, and 5 were identified as having been fired from the suspect firearm (the firearm used to produce the Item 1 test standards). Item 4 was not fired from the suspect firearm (the firearm used to produce the Item 1 test standards).
BWK9FQ	CONCLUSIONS: BULLET SPECIMENS ITEM 2 (Q1B), ITEM 3 (Q2B), AND ITEM 5 (Q4B), WERE FIRED WITH FIREARM ITEM 1 (K1 / COLT MK IV SERIES 80 MUSTANG, .380 AUTO, GRC: 06L). ITEM 4 ((Q3B)/GRC:09L) WAS NOT FIRED WITH FIREARM ITEM 1 (K1) DUE TO DIFFERENCES IN THE GENERAL RIFLING CHARACTERISTICS (06L VS. 09L).
C8YFZX	The items 2, 3 and 5 fired bullets were fired in the same firearm as the item 1 test fired bullets (Colt; unknown SN). The item 4 fired bullet was fired in a 2nd firearm. Item 4 is most consistent with a 38 caliber bullet typically loaded in ammunition designated 380 Auto. Item 4 was fired

TABLE 2

WebCode	Conclusions
	in a firearm conventionally rifled 9 left. A list of makes of firearms that may have fired item 4 includes, but is not limited to: Hi-Point.
CCQRQM	The Item 2, 3 and 5 bullets were identified as having been fired from the same firearm that fired the Item 1 bullets. The Item 4 bullet was not fired from the same firearm as the Item 1, 2, 3 and 5 bullets. It has design features consistent with bullets loaded in 380 Auto caliber cartridges and displays rifling characteristics similar to firearms by Hi-Point.
CHKJ8W	The fired bullets Items 2, 3, and 5 are identified as having been fired from the submitted firearm. The submitted fired bullet Item 4 is eliminated as having been fired from the submitted firearm. There are differences in class characteristics. Item 4 has 9 lands and grooves with a left hand twist. The submitted firearm has 6 lands and grooves with a left hand twist. Item 4 is consistent with being a .38 caliber class fired metal jacketed bullet displaying conventional rifling specifications of 9 lands and grooves with a left twist. These specifications are characteristic of .38 caliber class firearms manufactured by Hi-Point firearms. However, no suspected firearm should be overlooked.
CHMAFZ	[No Conclusions Reported.]
CJR4P6	The bullets marked 2, 3 and 5 were fired in the same firearm that fired item number "1" bullets. Bullet marked Item 4 was not fired from the firearm that fired bullets marked Item 1, 2, 3 and 5.
CQVTMD	A microscopic comparative examination of the bullet specimens disclosed that Items 2, 3, and 5 were fired from the Item #1 pistol. Item #4 was fired from a different firearm than Item #1.
CYLJYW	The bullets in Items 2, 3 and 5 were found upon microscopic comparison to have been discharged from the same barrel from which the bullets in Item 1 were discharged. The bullet in Item 4 was not discharged from the same barrel from which the bullets in Item 1 were discharged based on differences of class characteristics.
CYN4YT	Exhibits #1a, #1b, #1c, #2, #3, and #5 were fired from the same firearm. The exhibits are 38 caliber class (38/357/380/9mm) bullets. Exhibit #1a displays rifling characteristics similar to firearms by Colt and Smith & Wesson, among others. Exhibit #4 was not fired in the same firearm as Exhibits #1a, #1b, #2, #3, and #5. The exhibit is a 38 caliber class (38/357/380/9mm) bullet. Exhibit #4 displays rifling characteristics similar to firearms by Hi-Point, among possible others.
CZH32Y	Test fired bullets in item 1 were microscopically compared to the fired bullets in items 2, 3 and 5 and were found to have sufficient individual characteristics to conclude an identification. Therefore, the fired bullets in items 2, 3 and 5 were fired from the same firearm as item 1. Test fired bullets from item 1 were microscopically compared to the fired bullet in item 4 and were found to have different class characteristics. Therefore, the fired bullet in item 4 was fired from a different firearm.
D2VWED	As a result of this examination I found that the exhibit projectiles Items 2,3 and 5 were fired through the same barrel as the test fired projectiles in Item 1
D76AWC	Items #2, #3, and #5 were fired from the same firearm as Item #1. Item #4 was not fired from the same firearm that fired Items #1, #2, #3, and #5.
DEVJGF	An inter-comparison of the three test-fired bullets revealed some reproducible toolmarks in several land and groove impressions. A comparison of the test-fired bullets with questioned bullets #1-2, 1-3, and 1-5 revealed a sufficient amount of individual, firearm-produced, toolmark agreement in the land impressions to establish that all of these questioned bullets were fired in the same firearm. Questioned bullet #1-4 had a different number of rifling

TABLE 2

WebCode	Conclusions
	<p>impressions than the test-fired bullets and could not, therefore, have been fired in the same firearm. Statement of Identification: The identification of the firearm-produced toolmarks described above is made to the practical, not absolute, exclusion of all other firearms. This is because it is not possible to examine all firearms in the world, a prerequisite for absolute certainty. The conclusion that sufficient agreement for identification exists between two firearm-produced toolmarks means that the likelihood another unknown firearm could have made the questioned marks is so remote as to be considered a practical impossibility. Representative digital images were taken of the microscopic comparisons. All of these images are depicted in the case notes.</p>
DG8AUP	<p>The Item 2, 3 and 5 bullets are all identified, with practical certainty, as having been fired in the same firearm that fired the Item 1 bullets. The Item 4 bullet is eliminated as having been fired in the same firearm that fired the Item 1 bullets based on a difference in general rifling characteristics.</p>
DHWCF	<p>I microscopically compared the test-fired bullets to each other and found individual, firearm-produced markings which were reproducible and sufficient for identification. I compared a test-fired bullet to Items 1-2, 1-3, and 1-5 respectively, all three being fired .380 Auto caliber bullets that weighed approximately 95 grains and had been fired in a conventionally-rifled barrel having six lands and grooves with a left-hand twist. I found agreement in the class characteristics and sufficient agreement for identification in the individual characteristics, including striations in the land impressions, to conclude that these bullets were fired in the same firearm as the test-fired bullets (a Colt pistol, MK IV Series 80 Mustang pistol). I examined Item 1-4 and determined it to be a fired .380 Auto caliber bullet that weighed approximately 95 grains and had been fired through a conventionally-rifled barrel having nine lands and grooves with a left-hand twist. Based on the class characteristic differences (the number of lands and grooves and the land impression widths), this bullet was not fired in the Colt pistol. I referenced the class characteristics to the 2016 version of the FBI General Rifling Characteristics (GRC) File and found that Hi-Point pistols (model CF and CF380) in .380 Auto caliber could have fired this bullet. This list should not be considered all-inclusive; therefore, any suspected firearm with nine conventionally-rifled lands and grooves with a left-hand twist should be submitted for examination. Strength of Associations Made in the Identification of Firearm-Produced Toolmarks The identification of the three .380 Auto caliber bullets (Items 1-2, 1-3, and 1-5) to the test-fired bullets from the Colt pistol is made to the practical, not absolute, exclusion of all other firearms. This is because it is not possible to examine all other firearms in the world, a prerequisite for absolute certainty. The conclusion that sufficient agreement for identification exists between two firearm-produced toolmarks means that the likelihood another firearm could have made the questioned mark is so remote as to be considered a practical impossibility.</p>
DMAGAT	<p>Microscopic comparison was conducted with the following results: B1 (Item 2), B2 (Item 5), and B4 (Item 5) were fired from P1 (Item 1). B3 (Item 4) was not fired from P1, different LAG characteristics.</p>
DMNR4R	<p>Exhibits #1A through #1C, #2, #3, and #5 are 38 caliber class (380/9mm) bullets. They were fired from the same firearm. Exhibit #4 is a 38 caliber class (380/9mm) bullet. This bullet was not fired from the same firearm as Exhibits #1A through #1C, #2, #3, and #5. This bullet displays rifling characteristics similar to firearms by Hi-Point, among possible others.</p>
DMTCTF	<p>Items #2, 3 and 5 were examined and each found to contain one fired .380 Auto caliber full metal jacket bullet bearing six land and groove impressions in a left direction of twist. Item #4 was examined and found to contain one fired .380 Auto caliber full metal jacket bullet bearing nine land and groove impressions in a left direction of twist. Microscopic comparisons of Items</p>

TABLE 2

WebCode	Conclusions
	<p>#2, 3 and 5 with test fired bullets from Item #1 revealed matching barrel engraved striations. This finding confirms Items #2, 3 and 5 were fired from the same firearm as Item #1 (Colt .380 Auto caliber semi-automatic pistol, model MK IV Series Mustang). Microscopic comparison of Item #4 with test fired bullets from Item #1 revealed different class characteristics (groove widths and number of land / groove impressions). These findings confirm Item #4 was not fired from the same firearm as Item #1 (Colt .380 Auto caliber semi-automatic pistol, model MK IV Series Mustang). Based on the class characteristics observed, Item #4 is consistent with being fired from a Hi-Point firearm; however, other possibilities may exist.</p>
DT2QJQ	<p>Microscopic comparison was conducted with the following results: B-1, B-2 &amp; B-4 (Item's 1, 2 &amp; 5) were fired from P-1. (Item #1). B-3 (Item 4) was not fired from P-1 (Item #1) due to difference in class characteristics (LAG)</p>
DVKM4B	<p>From the firing marks present, consisting of general rifling form and fine detail within, we are of the opinion that bullets 1, 2, 3, and 5 had been discharged from the same weapon. The firing detail present on bullet 4 indicates that it was discharged from a different weapon from the one used to discharge the bullets 1,2,3 and 5.</p>
DWEAP	<p>MICROSCOPIC COMPARISON OF EVIDENCE BULLET SPECIMENS ITEM 2 THROUGH ITEM 5 WITH TEST FIRED BULLETS FROM RECOVERED FIREARM ITEM 1, REVEALS THE FOLLOWING: ITEM 2, ITEM 3, AND ITEM 5 CANNOT BE IDENTIFIED OR ELIMINATED AS HAVING BEEN FIRED WITH ITEM 1, OR THE SAME UNKNOWN FIREARM, DUE TO A LACK OF CORRESPONDING MICROSCOPIC MARKINGS PRESENT ON ITEM 2, ITEM 3, AND ITEM 5, AS WELL AS THE TEST FIRED BULLETS FROM ITEM 1. THEY DO HOWEVER ALL BEAR SIMILAR CLASS CHARACTERISTICS TO EACH OTHER. ITEM 4 WAS NOT FIRED WITH ITEM 1, OR THE SAME UNKNOWN FIREARM(S) AS ITEM 2, ITEM 3, AND ITEM 5 DUE TO A DIFFERENCE IN GENERAL RIFLING CHARACTERISTICS.</p>
DY4ZNY	<p>The 38 caliber bullets (items 01-03 and 01-05) weighing approximately 96 and 95 grains respectively, were fired from the Colt pistol represented by the test fired bullets (item 01-01). The 38 caliber bullet (item 01-04) weighs approximately 96 grains and was eliminated from having been fired from the same firearm as the test fired bullets (item 01-01) and the other bullets (items 01-02, 01-03, and 01-05) due to general rifling characteristic (GRC) differences. The bullet was fired from a firearm having nine lands and grooves inclined to the left. Commonly encountered firearms with similar rifling characteristics include but are not limited to those marketed by Hi-Point Firearms. The 38 caliber bullet (item 01-02) weighs approximately 95 grains and was not identified to nor eliminated from having been fired from the Colt pistol represented by the test fired bullets (item 01-01). It was eliminated from having been fired from the same firearm as the bullet (item 01-04) due to GRC differences. The bullet was fired from a firearm having six lands and grooves inclined to the left. Commonly encountered firearms with rifling characteristics similar to those on the bullet include but are not limited to those marketed by Colt, Smith &amp; Wesson, and Accu-Tek.</p>
DYZHJ9	<p>2. On 2016-06-13 during the performance of my official duties I received a sealed evidence bag with number PA4001418031 from Case Administration of the Ballistics Section, containing the following exhibits: 3.1 One (1) .380/9mm calibre fired bullet tests marked by me "210712/16" each and "1A", "1B" and "1C" respectively. 3.2 Four (4) .380/9mm calibre fired bullets marked by me "210712/16" each and "2", "3", "4" and "5" respectively. 4. The intention and scope of this forensic examination comprises of the following: 4.1 The examination and identification of fired bullets. 4.2 Microscopic individualization of fired bullets. 5. I examined the fired bullets mentioned in paragraphs 3.1 and 3.2 and compared the individual and class characteristics markings transferred to them by firearm components during the firing process</p>

TABLE 2

WebCode	Conclusions
	using a comparison microscope and found: 5.1 The bullets mentioned in paragraph 3.2 marked "210712/16" each and "2", "3" and "5" respectively, were fired from the same firearm as the bullets mentioned in paragraph 3.1. 5.2 The bullet mentioned I paragraph 3.2 marked "210712/16 4" was not fired from the same firearm as the exhibits and tests mentioned in paragraph 5.1.
E64NU6	The Items 2 through 5 questioned bullets were compared to the Item 1 test bullets. Items 2, 3 and 5 were identified with a practical certainty as having been fired from the same firearm that fired the Item 1 tests. Item 4 was fired from a second (unidentified) firearm. The rifling characteristics on Item 4 were entered into the General Rifling Characteristics database. Firearms with similar rifling characteristics include pistols produced by Hi-Point. This should not be construed as an all-inclusive list of firearms with those characteristics.
E8VKLJ	The Item 2, 3, and 5 bullets were identified as having been fired from the same firearm as Item 1. The Item 4 bullet was not fired from the same firearm as Item 1. It has design features consistent with bullets loaded in 380 Auto caliber ammunition and displays rifling characteristics similar to firearms by Hi-Point.
EA4KTC	Our laboratory is not reporting potential associations in terms of "identification" or "inconclusive", but indicates the level of support that the observations bring to the proposition that the questioned bullet was fired by the firearm at the source of the control bullets as opposed to another unknown firearm. In the present case, we conclude as follows: The observations provide very strong support for the view that the bullet under item 2 and the bullet under item 3 were fired by the firearm at the source of the control bullets under item 1, rather than by another unknown firearm. By very strong support, we mean that the observations are about 8000 times more likely if the bullets were fired with the same firearm as the bullets under item 1. For the bullet under item 5, the strength of support for the same source is lower (strong support), as the observations are about a 1000 times more likely if the bullet had been fired by was fired with the same firearm as the bullets under item 1, rather than an unknown firearm. The bullet under item 4 cannot have been fired by the same firearm as bullets under item 1 because of an observed difference in terms of number of land impressions.
EC7LT9	Items 2, 3 and 5 were identified as having been fired from the firearm associated with Item 1. The identifications were confirmed by another qualified examiner. Item 4 was eliminated from having been fired from the firearm associated with Item 1 based on differences in class characteristics.
ECA7HX	Exhibits 1 through 5 consist of fired .380 caliber, copper full metal flat nose jacketed bullets that bear marks of value for comparison. Examination and microscopic comparison of Exhibits 1 through 5 identified the Exhibit 1, 2, 3 and 5 bullets as having been fired from the same firearm. The Exhibit 4 bullet was eliminated as having been fired from the firearm that fired Exhibits 1, 2, 3 and 5 based on differences in general rifling characteristics (GRCs).
ECPEJK	The evidences Item 2, Item 3 and Item 5: have correspondence of features with the evidence Item 1.
EDWWGG	Items 1, 2 and 5 were discharged from the same pistol that item 1 (Colt MK IV Series 80 Mustang). Item 4 was discharged from a different pistol.
EJN3X4	Item 1 was microscopically compared to items 2 and 3. There is sufficient agreement in both discernible class and individual characteristics to identify items 2 and 3 as being fired from the same firearm as item 1. Item 1 was microscopically compared to item 4 and due to a lack of agreement of discernible class characteristics it is excluded as being fired from the same firearm as item 1. Item 1 was microscopically compared to item 5 and found to have sufficient

TABLE 2

WebCode	Conclusions
	agreement of discernible class characteristics but insufficient agreement of individual characteristics and is inconclusive as to being fired from the same firearm as item 1.
ELW7Y8	Three of the questioned bullets (Items 001-2, 001-3, and 001-5) were fired from the same firearm that test fired the bullets in Item 001-1. The fourth questioned bullet (Item 001-4) was not fired from the same firearm that test fired the bullets in Item 001-1.
ELYW6P	The conclusion in this section are the opinions of the undersigned examiner. When a conclusion is verified, it is also the opinion of the verifier. Items 1A-1C were reported to be test fires from a 380 Auto Colt model MK IV Series 80 Mustang pistol. These items were inter-compared and indexed to each other. Items 2, 3, and 5 were identified as having been fired from the same firearm as Item 1C based on the agreement of the combination of individual characteristics and all discernible class characteristics. Item 4 was eliminated as having been fired from the same firearm as Item 1C due to disagreement of discernible class characteristics. Item 4 is a 38/9mm caliber-class bullet fired from a firearm with a rifling system of 9 lands and grooves with a left twist. The size, weight and configuration of Item 4 are most consistent with bullets typically found loaded in 380 Auto cartridges. Firearms with a similar rifling system include, but are not limited to, the following: Hi-Point semi-automatic pistols. This is not meant to be an all-inclusive list but rather an investigative aide, any suspect firearm of the appropriate caliber-class should be submitted for comparison. Current Integrated Ballistics System (IBIS) / BrassTRAX technology in this laboratory is not capable of bullet imaging; therefore no entry was made.
EMMGME	Items #2, 3, and 5 were examined and determined to be .380 Auto caliber, copper full metal jacket, fired bullets exhibiting six lands and grooves in a left direction of twist. Item #4 was examined and determined to be a .380 Auto caliber, copper full metal jacket, fired bullet exhibiting nine land and grooves in a left direction of twist. Based on the general rifling characteristics observed, this bullet is consistent with having been fired from a Hi-Point pistol or carbine; however, other possibilities may exist. Microscopic comparisons of Items #2, 3, and 5 with one of the test fired bullets from Item #1 revealed matching barrel engraved striations. This finding confirms that these bullets were all fired from the same firearm. Microscopic comparisons of Item #4 with the test fired bullets from Item #1 revealed different class characteristics (number of lands and grooves, groove widths). This finding confirms that Item #4 was not fired from the same firearm as the bullets from Item #1.
EPCQTA	1. Microscopic examination of Exhibits 2, 3, and 5 (bullets) revealed they were fired from the same firearm as Exhibit 1 (bullets). 2. Microscopic examination of Exhibit 4 (bullet) revealed it was not fired from the same firearm as Exhibit 1 (bullets).
EQQ4MX	Exhibit 1 contained three test fired Winchester Train and Defend 380 Auto 95 grain bullets, reportedly fired from a Colt MK IV Series 80 Mustang 380 Auto caliber pistol. Exhibits 1A-1C were microscopically compared to each other and to Exhibits 2-5. Based on an agreement of class characteristics and sufficient agreement of individual characteristics, Exhibits 2, 3 and 5 were fired in Exhibit 1. Based on a disagreement of class characteristics, Exhibit 4 was not fired in Exhibit 1. Exhibit 4 was fired in a firearm having nine lands and grooves with a left twist. Firearms that could have fired Exhibit 4 include, but are not limited to, Hi-Point 380 caliber pistols. This does not preclude the possibility another make not listed was used.
ER3ZT3	The Exhibit #2, #3 and #5 bullets were fired from the same firearm as the Exhibit #1 bullets. The Exhibit #4 bullet was not fired from the same firearm as the Exhibit #1 bullets. The Exhibit #4 bullet has design features consistent with bullets loaded in 380 Auto caliber cartridges and displays rifling characteristics similar to firearms by Hi-Point among possible others.
ETPQRL	Exhibits #1-T1 through #1-T3 were microscopically inter-compared. Exhibit #1-T2 was used

TABLE 2

WebCode	Conclusions
	for comparison purposes. The Exhibit #2, #3 and #5 bullets were fired from the same firearm as Exhibit #1-T2. Exhibit #4 was not fired from the same firearm as Exhibits #1-T2, #2, #3 and #5. This bullet is 38 caliber class (380/9mm) and has design features consistent with bullets loaded in 380 Auto caliber cartridges. It displays rifling characteristics similar to firearms by Hi-Point, among possible others.
EXLE79	Item 1 bullets were microscopically examined in conjunction with Items 2, 3, 4, and 5 bullets. Based on these comparative examinations it was determined that: A. Items 2, 3, and 5 bullets were fired through the same barrel as Item 1 bullets. B. Item 4 bullet bear different rifling class characteristics as Item 1 bullets and therefore was not fired through the same barrel as Item 1 bullets. The general rifling characteristics that are present on Item 4 bullet are common to .380 auto caliber pistols manufactured by Hi-Point firearms
F27AYR	The three test bullets from Item #1 were microscopically examined in conjunction with the bullet in Item #2, the bullet in Item #3, the bullet in Item #4, and the bullet in Item #5. Based on these comparative examinations, it was determined that: A) The bullet in Item #2, the bullet in Item #3, and the bullet in Item #5 had been fired through the barrel of the same firearm as the three test bullets from Item #1. B) The bullet in Item #4 bears different class characteristics than the three test bullets from Item #1 and therefore had not been fired through the barrel of the same firearm as the three test bullets from Item #1.
F2YF6K	Lab Number: P16-00108-2. Item 5: Three bullets from recovered firearm (contributor Item 1). Item 6: Bullet recovered from victim (contributor Item 2). Item 7: First bullet recovered from wall (contributor Item 3). Item 8: Second bullet recovered from the wall (contributor Item 4). Item 9: Bullet recovered from snack display (contributor Item 5). Results of Examination: Item 6 (contributor Item 2), Item 7 (contributor Item 3), and Item 9 (contributor Item 5) are .38 caliber/9mm full metal jacketed bullets that were fired from a barrel rifled with six grooves, left twist. The Item 6 (contributor Item 2), Item 7 (contributor Item 3), and Item 9 (contributor Item 5) bullets were identified as having been fired from the barrel of the Item 5 (contributor Item 1) pistol. Item 8 (contributor Item 4) is a .38 caliber/9mm full metal jacketed bullet that was fired from a barrel rifled with nine grooves, left twist. The Item 8 (contributor Item 4) bullet was excluded as having been fired from the barrel of the Item 5 (contributor Item 1) pistol due to differences in rifling characteristics. A check of the FBI Laboratory's General Rifling Characteristics (GRC) database produced a list of firearms with GRCs like those present on the Item 8 (contributor Item 4) bullet that includes pistols marketed by Hi-Point. Methods: Bullets: Two bullets, either two evidence items or one evidence item and one bullet test fired in the Laboratory, undergo two stages of comparison. First, the bullets are examined to determine and compare their class characteristics. The class characteristics of fired bullets include diameter, number of land and groove impressions, direction of twist, and the widths of the land and groove impressions. If the class characteristics of the two bullets are not clearly different, the examination moves to a second stage using comparative microscopy. A microscopic comparison examination consists of a search of the striated marks present on two bullets to determine if patterns of similarity exist. At the completion of these comparisons, one of the following three opinions is issued: 1) Exclusion (Elimination): If two bullets have different class characteristics, an Exclusion opinion is rendered. Exclusion opinions based on a measured class difference or the physical comparison of a discernable difference in class characteristics cannot be reported unless a second qualified firearms/toolmarks Examiner has examined the items in question and reached the same conclusion. 2) Identification: If the following conditions are met during the comparison of microscopic marks, an opinion of Identification is rendered: a) The degree of similarity is greater than the Examiner has ever observed in previous evaluations of bullets known to have been fired from different barrels. b) The degree of similarity is equivalent to that normally observed in bullets known to have been fired from the



TABLE 2

WebCode	Conclusions
	<p>same barrel. When these conditions are met the likelihood another tool (firearm) could have produced the same mark is so remote as to be considered a practical impossibility. An Identification opinion cannot be reported unless a second qualified firearms/toolmarks Examiner has examined the items in question and reached the same conclusion. 3) Inconclusive (No Conclusion): If the conditions required for an Exclusion or Identification are not observed, an opinion of Inconclusive is rendered. A failure to meet to the conditions for an Exclusion or Identification could be the result of limited microscopic marks of value, a lack of any observed microscopic similarity, or microscopic similarity that is present but too limited to meet the criteria for Identification. GRC: The appropriate GRC measurements are entered in the database, which then returns a list of all firearms in the database with compatible GRCs. Limitations: Bullets: Firearms/Toolmark Identification is an empirical science that relies on objective measurements and a subjective comparison of microscopic marks of value. Due to random changes in barrels such as wear, corrosion and lead accumulation, bullets fired from the same barrel are sometimes not identifiable as such. Additionally, some barrel manufacturing methods routinely produce barrels that leave limited microscopic marks of value on fired bullets. Damaged, corroded or fragmented bullets may be of little or no value for comparison purposes. GRC: The GRC database contains information obtained from firearms at the FBI Laboratory and from voluntary submissions of test-fired specimens from law enforcement agencies around the world. It is not a comprehensive list of all firearms, and contains no information about the numbers of each type of firearm present in the general population. The firearms listed in the report are typically those considered to be more common and are included at the discretion of the examiner authoring the report.</p>
F3EP7X	<p>Items 2, 3 and 5 were fired from the same firearm as the bullets contained in Item 1. Item 4 was not fired from the same firearm as the bullets contained in Item 1. Only 380 AUTO semiautomatic pistols manufactured by HI-POINT FIREARMS were identified as a possible source of Item 4. This is not all-inclusive.</p>
F6ZF83	<p>After comparing the individual and class characteristics markings on exhibits marked 1, 2, 3, 4 and 5 using a comparison microscope and found that: 2.1 The bullets marked 2, 3 and 5 were fired from the same firearm that fired bullets marked 1A, 1B &amp; 1C. 2.2 The bullets mentioned in 2.1 were not fired from the same firearm that fired the bullet marked 4.</p>
FBT9QX	<p>Item 1 (three bullets said to be test fired from a Colt MK IV Series 80 Model Mustang 380 Auto caliber pistol) and Items 2, 3 and 5 (three bullets) were fired by the same firearm. Item 4 (one bullet) was fired in a different firearm than Item 1. Examination of Item 4 showed it to be consistent with a 380 Auto caliber bullet fired from a firearm with 9 lands and grooves with a left twist. Firearms with this rifling pattern include, but are not limited to, those manufactured under the brand names Hi-Point.</p>
FH7JG4	<p>The bullet from the victim (Item 2), the first bullet recovered from the wall (Item 3) and the bullet recovered from the snack display (Item 5) were determined to have been fired from the recovered firearm. The second bullet from the wall (Item 4) was determined to have been fired from a second firearm.</p>
FHK3B9	<p>Item 1 is three (3) known fired .380 Auto caliber, copper jacketed, round nose flat point bullets, that were fired from a rifled barrel with six (6) lands and grooves, left twist. (known). Items 2, 3, and 5 are three (3) fired .380 Auto caliber, copper jacketed, round nose flat point bullets, that were identified as having been fired from the Item 1 (known) pistol. Item 4 is a .380 Auto caliber, copper jacketed, round nose flat point bullet, that was fired from a rifled barrel with nine (9) lands and grooves, left twist. Firearms that produce rifling impressions like these found on the Item 4 bullet include, but are not limited to .380 Auto caliber semi-automatic pistols marketed by HI-Point.</p>

TABLE 2

WebCode	Conclusions
FQ4289	1. The pieces of evidence described in the Item 1, Item 2, Item 3 and Item 5, are bullets, .380 caliber, metal case type, with left twist (L-6) and were fired by the same firearm. 2. The piece of evidence described in the Item 4, is a bullet, .380 caliber, metal case type, with left twist (L-9) and was fired by a firearm.
FRGPUU	Item 1.1 consists of three fired bullets stated to have been fired by a Colt brand Model MK IV Series 80 Mustang 380 Auto pistol. Items 1.2, 1.3 and 1.5 consist of three fired 38 caliber bullets having six land and groove impressions with a left twist. They were microscopically compared to Item 1.1. Items 1.2, 1.3 and 1.5 were identified as having been fired by the firearm that was stated to have fired the bullets contained in Item 1.1. Item 1.4 is a fired 38 caliber bullet having nine land and groove impressions with a left twist. It was microscopically compared to the bullets from Item 1.1. Item 1.4 can be eliminated as having been fired by the firearm that was stated to have fired the bullets contained in Item 1.1. Common firearms with the same general rifling characteristics as Item 1.4 include Hi- Point. This is not meant to be an all-inclusive list; therefore, all 380 Auto firearms encountered during the course of the investigation should be submitted for comparative examination.
FW9TMX	Exhibits 2, 3, and 5 consist of three (3) .38 caliber-class bullets fired from a barrel rifled with six (6) lands and grooves and a left twist. These exhibits were microscopically compared to the Exhibit 1 test fired bullets. There is an agreement of all discernible class characteristics and sufficient agreement of individual characteristics to identify Exhibits 2, 3 and 5 as having been fired from the same firearm as the Exhibit 1 test fires. Exhibit 4 is a .38 caliber-class bullet fired from a barrel rifled with nine (9) lands and grooves and a left twist. Based on a difference in class characteristics, the Exhibit 4 bullet was eliminated as having been fired from the same firearm as Exhibits 1, 2, 3 and 5.
FWCDB2	Comparison microscope examinations were conducted on the evidence listed above. The findings of this examiner are the following: a. Exhibits 2 through 5 are .38 caliber class fired projectiles normally loaded in a .380 Auto caliber cartridge. b. Exhibits 2, 3 and 5 were fired from the same firearm as the exhibit 1 test fires. c. Exhibit 4 was eliminated as being fired from the same firearm as the exhibit 1 test fires, based on class characteristics. The following is an investigative lead only and not intended to exclude all other makes of firearms. Based on class characteristics of Exhibit 2, the possible firearm is a: .380 Auto HI-POINT pistol.
FX8Y4T	The test bullets in Item #1 from the seized Colt MK IV Series 80 Mustang 380 Auto pistol were microscopically examined in conjunction with the bullets in Items #2, #3, #4, and #5. Based on these comparative examinations and observed class and individual characteristics, it was determined that: A. The bullets in Items #2, #3, and #5 had all been fired through the barrel of the pistol used to fire the test bullets in Item #1. B. Based on a difference in class characteristics, it was determined that the bullet in Item #4 had not been fired in the same firearm as the test bullets in Item #1 or the bullets in Items #2, #3, and #5. The general rifling characteristics present on the bullet in Item #4 are most common to 380 Auto caliber firearms of Hi-Point manufacture. Suspect firearms should be submitted for comparison with this item.
FXY4AK	Results of Examinations: Items 6 through 7 and 9 (your item numbers 2, 3, and 5) are three .38 caliber (which includes .380 Auto) copper jacketed round nose bullets that were fired from a barrel(s) rifled with six grooves, left twist. Due to a lack of sufficient corresponding microscopic marks of value, no conclusion could be reached as to whether the Items 6 through 7 and 9 bullets were fired from the same barrel or from the same barrel as the Item 5 (your Item 1) test fires. It should be noted that the Item 5 test fired bullets could not be identified to each other. A check of the FBI Laboratory's General Rifling Characteristics (GRC) database produced a list of firearms with GRCs like those present on the Items 6 through 7 and 9 bullets

TABLE 2

WebCode	Conclusions
	<p>that includes pistols marketed by Accu-tek, Colt and Smith &amp; Wesson. Item 8 (your item 4) is a .38 caliber (which includes .380 Auto) copper jacketed round nose bullet that was fired from a barrel rifled with 9 grooves, left twist. Due to a difference in class characteristics (9 left verse 6 left) the Item 8 bullet was not fired from the same barrel(s) as the Item 5 through Item 7 and 9 bullets. A check of the FBI Laboratory's General Rifling Characteristics (GRC) database produced a list of firearms with GRCs like those present on the Items 8 bullet that includes pistols marketed by Hi-Point. Methods: Bullets: Two bullets, either two evidence items or one evidence item and one bullet test fired in the Laboratory, undergo two stages of comparison. First, the bullets are examined to determine and compare their class characteristics. The class characteristics of fired bullets include diameter, number of land and groove impressions, direction of twist, and the widths of the land and groove impressions. If the class characteristics of the two bullets are not clearly different, the examination moves to a second stage using comparative microscopy. A microscopic comparison examination consists of a search of the striated marks present on two bullets to determine if patterns of similarity exist. At the completion of these comparisons, one of the following three opinions is issued: 1) Exclusion (Elimination): If two bullets have different class characteristics, an Exclusion opinion is rendered. Exclusion opinions based on a measured class difference or the physical comparison of a discernable difference in class characteristics cannot be reported unless a second qualified firearms/toolmarks Examiner has examined the items in question and reached the same conclusion. 2) Identification: If the following conditions are met during the comparison of microscopic marks, an opinion of Identification is rendered: a) The degree of similarity is greater than the Examiner has ever observed in previous evaluations of bullets known to have been fired from different barrels. b) The degree of similarity is equivalent to that normally observed in bullets known to have been fired from the same barrel. When these conditions are met the likelihood another tool (firearm) could have produced the same mark is so remote as to be considered a practical impossibility. An Identification opinion cannot be reported unless a second qualified firearms/toolmarks Examiner has examined the items in question and reached the same conclusion. 3) Inconclusive (No Conclusion): If the conditions required for an Exclusion or Identification are not observed, an opinion of Inconclusive is rendered. A failure to meet to the conditions for an Exclusion or Identification could be the result of limited microscopic marks of value, a lack of any observed microscopic similarity, or microscopic similarity that is present but too limited to meet the criteria for Identification. GRC: The appropriate GRC measurements are entered in the database, which then returns a list of all firearms in the database with compatible GRCs. Limitations: Bullets: Firearms/Toolmark Identification is an empirical science that relies on objective measurements and a subjective comparison of microscopic marks of value. Due to random changes in barrels such as wear, corrosion and lead accumulation, bullets fired from the same barrel are sometimes not identifiable as such. Additionally, some barrel manufacturing methods routinely produce barrels that leave limited microscopic marks of value on fired bullets. Damaged, corroded or fragmented bullets may be of little or no value for comparison purposes. GRC: The GRC database contains information obtained from firearms at the FBI Laboratory and from voluntary submissions of test-fired specimens from law enforcement agencies around the world. It is not a comprehensive list of all firearms, and contains no information about the numbers of each type of firearm present in the general population. The firearms listed in the report are typically those considered to be more common and are included at the discretion of the examiner authoring the report.</p>
G23ACX	<p>Due to insufficient unique markings, Items 2, 3 and 5 could neither be identified nor eliminated as having been discharged from the same known firearm that generated the markings on Item 1. Due to a difference in rifling systems, Item 4 was eliminated as having been discharged in the known firearm that produced the markings on Item 1.</p>

TABLE 2

WebCode	Conclusions
G3XTEY	[No Conclusions Reported.]
G4M2JT	The projectiles in Sub. 2, 3 & 5 were fired in the gun that fired the projectiles in Sub. 1. The projectile in Sub. 4 was not fired in the gun that fired the projectiles in Sub. 1.
G7BTBQ	Items 2, 3, and 5 were fired in the same firearm as Item 1 (identification). This conclusion was verified by Senior Firearms Examiner [Name]. Item 4 was not fired in the same firearm as items 1, 2, 3, and 5 (Elimination). This conclusion was verified by Senior Firearms Examiner [Name]. Item 4 is consistent with the 38 caliber family, which includes 380 Auto. In the event that Item 4 was fired in a 380 Auto firearm, then it could have been fired in a firearm of the following manufacture: Hi Point Firearms.
GANMYA	The submitted test fires (Item 1) were microscopically compared to the evidence Items 2, 3, 4, and 5. Based on the quantity and quality of the individualizing characteristics, it was determined that Items 2, 3, and 5, were discharged from the same firearm which discharged the Item 1 test fires. Item 4 was determined to have been discharged from a different firearm than the Item 1 test fires. A database search showed that a Hi-Point Firearms 380 Auto or 9mm caliber firearm, pistol or carbine, may have fired this item. Note: This listing is not comprehensive, other firearms with the same rifling pattern may exist and have not been entered into the data base.
GB87B9	The recovered questioned bullets Items 2, 3 and 5 were fired in the same firearm as the known bullets, Item 1. The recovered questioned bullet Item 4 was fired in another firearm.
GCFA6K	Items 2-3-5 are fired by the same firearm that fired item 1. Item 4 are fired by another firearm => 2 different firearms
GCKQ3J	Item 001-A consists of three test fired bullets from a recovered Colt MK IV, series 80 Mustang, .380 Auto semi-auto pistol. Item 001-B is a spent copper jacketed bullet recovered from the victim. Items 001-C and D are spent copper jacketed bullets recovered from a wall at the scene. Item 001-E is a spent copper jacketed bullet recovered from a snack display at the scene. It was determined that items 001-B, 001-C, 001-D and 001-E are consistent in size, weight, shape and composition with .380 FMJ bullets. Items 001-A, 001-B, 001-C and 001-E were microscopically compared to each other. It was determined that these bullets were all fired from the Colt pistol that fired the test fired bullets in item 001-A. The class characteristics of item 001-D are different from the bullets listed in items 001-A, 001-B, 001-C and 001-E. It was determined that the bullet in item 001-D was not fired from the recovered Colt pistol that fired the test fired bullets in item 001-A. Per the AFTE General Rifling Characteristics database, item 001-D, may have been fired from a Hi-Point semi-auto pistol, or any other firearm exhibiting similar characteristics.
GCVTPH	The below listed spent bullets were microscopically examined and compared with test bullets fired from the Colt MK IV series 80 Mustang 380 auto handgun, PR# GCVTPH, Lab Evidence # 001-A1. Numerous corresponding individual characteristics were observed. Therefore, it is my opinion that the below listed items were fired from this firearm. Lab Evidence# Property# Item# Item Description 001-A2 GCVTPH 2 Spent 380 auto bullet 001-A3 GCVTPH 3 Spent 380 auto bullet 001-A5 GCVTPH 5 Spent 380 auto bullet The below listed spent bullet was microscopically examined and determined not to have been fired from the Colt MK IV series 80 Mustang 380 auto handgun, PR# GCVTPH, Lab Evidence # 001-A1. This bullet was fired from a weapon having a barrel with 9 lands and grooves with a left twist. Lab Evidence# Property# Item# Item Description 001-A4 GCVTPH 4 Spent 380 auto bullet
GHKFBB	It was determined that the bullet recovered from the victim (Item 2), the first bullet from the wall (Item 3), and the bullet from the snack display (Item 5) were all fired in the Colt pistol (Item 1).

TABLE 2

WebCode	Conclusions
	The second bullet from the wall (Item 4) was not fired from the Colt pistol (Item 1).
GJWYFD	I examined the fired bullets marked as item 1 to item 5 and compared the individual and class characteristics markings on them using a comparison microscope and found: The bullets marked item 2, 3 and 5 were fired from the same firearm as the known bullets marked as item 1. Land and groove marks correspond. The bullet marked item 4 was not fired from the same firearm as items 1, 2, 3 and 5. Land and groove marks do not correspond.
GL7VBH	The below listed spent bullets were microscopically examined and compared with test bullets fired from the Colt MKIV, Series 80 Mustang, 380 auto handgun, Test #16-526, Lab Evidence #001-A1. Numerous corresponding individual characteristics were observed. Therefore, it is my opinion that the below listed items were fired from this firearm. Lab Evidence # Property # Item # Item Description 001-A2 16-526 2 Spent 38/380 caliber bullet 001-A3 16-526 3 Spent 38/380 caliber bullet 001-A5 16-526 5 Spent 38/380 caliber bullet The below listed spent bullet was examined and determined to not have been fired from the Colt MKIV, Series 80 Mustang, 380 auto handgun, Test #16-526, Lab Evidence #001-A1. This spent bullet was determined to have been fired from a weapon having a barrel with 9 lands and grooves with a left twist. Lab Evidence # Property # Item # Item Description 001-A4 16-526 4 Spent 38/380 caliber bullet
GMGX3	Based on the agreement of all discernible class characteristics and sufficient agreement of individual characteristics in the land impressions, it was determined that bullets #2, #3 and #5 were fired from the submitted firearm. Based on the significant difference in class characteristics (rifling), it was determined that bullet #4 was not fired from the submitted firearm.
GNCDY	The four jacketed bullets (Items 2-5) were microscopically compared to test fired bullets from the Colt, model MK IV Series 80 Mustang, .380 Auto caliber pistol (Item 1). Based on sufficient corresponding individual barrel markings observed, three of the jacketed bullets (Items 2, 3, and 5) were identified as having been fired from the Colt pistol (Item 1). Because of differences observed in class characteristics, the jacketed bullet (Item 4) was excluded as having been fired from the Colt pistol (Item 1), and was also excluded from all other bullets in this case (Items 2, 3, and 5). The jacketed bullet (Item 4) was determined to be characteristic of a .380 Auto caliber full metal jacket style bullet. It was fired from a firearm rifled with nine grooves, left hand twist. Firearms that share these rifling characteristics include firearms manufactured by Hi-Point. Any suspect firearm should be submitted for comparison.
GQFBLR	The bullets were examined and microscopically inter-compared with the following results: The bullets (Lab Item 2, 3 & 5) were identified as having been fired by the same firearm that fired the test fired bullets (Lab item 1). The remaining bullet (Lab item 4) was eliminated from having been fired by the same firearm that fired the test fired bullets (Lab item 1).
GYTEF8	Item 2,3 and 5 bullets were fired from the same firearm as the item 1 bullets. Item 4 bullet was different from the firearm used to fire item1 bullets.
H4J2WY	The test fires Item 1, lack individual characteristics and were unsuitable for comparison. Items 2, 3, and 5 could neither be identified nor eliminated as having been fired from the same unknown firearm due to insufficient agreement/disagreement of individual characteristics; however, similar class characteristics were noted. Item 4 was eliminated as having been fired from the same firearm that fired the test fires, Item 1, or from the same unknown firearm that fired Items 2, 3, and 5, due to disagreement of all discernable class characteristics.
H6DK37	The three spent projectiles listed in Item 2, Item 3, and Item 5 were all fired from the .380 Auto caliber Colt MK IV series 80 Mustang semi-automatic pistol that produced the test fires listed in Item 1.

TABLE 2

WebCode	Conclusions
H8YDTF	A microscopic examination and comparison of the evidence described above revealed the following: Test Fires (1,1,1), from above listed firearm and Deformed Bullets (2,3,5) are identified as having been discharged from the SAME firearm based on the observed agreement of their class characteristics and sufficient agreement of their individual characteristics. Deformed Bullet (4) is ELIMINATED to Test Fires (1,1,1), from above listed firearm and Deformed Bullets (2,3,5) based on the observed disagreement of class characteristics.
H9CXLP	Based upon possessing agreement in class characteristics, Item #2,3 and 5 have been compared microscopically with each other and with the known tests from Item #1. Class characteristics agree in caliber and general rifling characteristics. Individual characteristics in the land engraved areas are sufficient for identification. Items #2,3,and 5 were all fired from the same firearm, the Colt MKIV Series 80 Mustang pistol from Item #1. No subclass characteristics were observed. Item #4 is eliminated from being fired from Item #1 based on differences in class characteristics.
H9T4X9	2.1. The bullets mentioned in 3.1.1, 3.2.1, 3.3.1 and 3.5.1 were fired from a first firearm. 2.2. The bullet mentioned in 3.4.1 was fired from a second firearm.
HE466X	On June 14, 2016, lab item #1 (five separate boxes containing projectiles) were microscopically examined and compared. CTS Items #2, 3, and #5 (three ~ .380 caliber FMJ projectiles) were positively identified as having been fired from CTS Item #1 (three ~ .380 caliber FMJ projectiles from test firing a Colt pistol). CTS Item #4 (one ~ .380 caliber FMJ projectile) was eliminated as having been fired from CTS Item #1 (three ~ .380 caliber projectiles from test firing a Colt pistol).
HPV4K3	From the sample that had been received, it can be concluded that each bullet consists of .380 caliber ammunition and the rifling type for each bullet is "cut or button" which give the land and groove mark also the characteristics on the bullet for ballistic test. Three bullet in item 1 had the same characteristics and can be defined had been fired from the same gun which are Colt MK IV Series 80 Mustang handgun that had been recovered in the crime scene. The comparison between each bullet in item 1 and the bullet in item 2, 3 and 5 give the result that all bullet have same characteristics, therefore we can concluded that bullet in item 1, 2, 3 and 5 are been fired in the same firearm which are Colt MK IV Series 80 Mustang. The comparison between each bullet in item 1 and the bullet in item 4 give the result that bullet in item 4 did not have same characteristics with each bullet in item 1, which give the information another handgun been use in the case.
HR7UZY	Items 2, 3 and 5 were fired in the .380 Auto Colt pistol, model MK IV Series 80 Mustang. Item 4 was fired from a second firearm. Suspect weapons include .380 Auto Hi-Point pistols; however, any suspect weapon should be submitted for analysis.
HUTK23	1. The bullets described in items 1, 2, 3 and 5, are .380 caliber, metal case, with left rifling (L-6) and were fired by the same firearm. 2. The bullet described in item 4, is .380 caliber, metal case, with left rifling (L-9) and was fired by a firearm.
HYQUEQ	The fired bullets, items #2, 3, 5 were microscopically identified as having been fired from the test fired firearm that fired item #1. The fired bullet, item #4, was eliminated from having been fired from the firearm that fired item #1, 2, 3, 5. due to differences in class characteristics.
HYTJMT	Exhibits 2, 3, 4 and 5 are .380 Auto caliber bullets. Exhibits 2, 3 and 5 were microscopically compared with the test bullets of Exhibit 1, and they were identified as having been fired from the same firearm. Exhibit 4 has different class characteristics than the test bullets of Exhibit 1, therefore, it is eliminated as having been fired from the firearm that fired the Exhibit 1 bullets. Firearms with general rifling characteristics similar to Exhibit 4 include, but are not limited to

TABLE 2

WebCode	Conclusions
	the following: Hi-Point Firearms.
J29MH4	I MICROSCOPICALLY EXAMINED THESE ITEMS AND COMPARED THE FIRING MARKS PRESENT ON THEM. SIGNIFICANT DETAILED AGREEMENT IN THE MARKS LED ME TO CONCLUDE THAT THE SAME WEAPON THAT HAD FIRED ITEM 1 HAD ALSO FIRED ITEMS 2, 3 AND 5. ITEM 4 HAD BEEN FIRED IN A DIFFERENT WEAPON WITH AN UNUSUAL RIFLING CHARACTERISTIC OF NINE LEFT HAND TWISTS, SUCH AS A HI-POINT PISTOL
J74793	I compared items 2, 3 & 5 and found these items have the same class of firearm produced marks and sufficient agreement of individual marks for identification. Item 4 has a different class of rifling to items 2, 3 & 5 and this was fired in a different firearm. I compared the test fires (Item 1) and found the same class and sufficient agreement of individual marks with Items 2, 3 & 5. Items 2, 3 & 5 were fired in the same firearm that fired item 1.
J77VFK	Items 2, 3 & 5 were identified as having been fired from the same firearm as the test fires designated Items 1A-1C; based on agreement of the combination of individual characteristics & all discernable class characteristics. Item 4 was eliminated as having been fired from the same firearm as the test fires designated Items 1A-1C; due to disagreement of discernible class characteristics. Item 4 is a 38/9 mm caliber-class bullet fired from a firearm with a rifling pattern of nine (9) lands & grooves with a left twist. The size, weight and configuration of Item 4 are most consistent with bullets typically found loaded in 380 Auto cartridges.
J78PW6	I conducted a comparative examination between the three bullets (Item 1) and each of the bullets in Items 2, 3, 4 and 5. I formed the following opinions based on my examinations: 1. The two bullets (Items 3 and 5) were discharged through the same barrel as the bullets in Item 1. 2. The bullet (Item 4) was not discharged through the same barrel as the bullets in Item 1. 3. The comparison with the bullet (Item 2) was inconclusive. Although there were indications it may have been discharged through the same barrel as the bullets in Item 1, the reproduction of the marks was not clear enough for a more definitive conclusion.
J9PYZB	The three (3) fired bullets, items #2, #3 and #5, were microscopically compared with bullets reported as having been previously test fired by a Colt pistol, item #1. These comparisons revealed matching individual barrel engraved striations, confirming that the three (3) fired bullets were fired by the Colt pistol. The one (1) fired bullet, item #4, was microscopically compared with bullets reported as having been previously test fired by a Colt pistol, item #1. These comparisons revealed different class characteristics (number of lands / grooves), excluding the one (1) fired bullet as having been fired by the Colt pistol. Visual and microscopic examination of the one (1) fired bullet, item #4, revealed it is consistent with a 380 Auto caliber full metal jacketed bullet fired from a rifled barrel having nine (9) lands and nine (9) grooves, left-hand twist. These rifling specifications are consistent with Hi-Point pistols; however, other possibilities may exist.
JBURP4	Examinations showed Items 2, 3 and 5 were discharged from the same firearm as Item 1. Examinations showed Item 4 was not discharged from the same firearm as Item 1 due to differences in class characteristics.
JCRWB4	1.The three recovered questioned bullets(Item 2,3 and 5) were identified to be fired in the same firearm as the known bullets(Item 1). 2.The recovered bullet(Item 4) was eliminated to be fired in the same firearm as the known bullets(Item 1).
JPHJQ	Items 1, 2, 3 and 5 could neither be identified nor eliminated as having been fired from the same firearm due to insufficient agreement / disagreement of individual characteristics; however, similar class characteristics were noted. Item 4 was eliminated as having been fired from the same firearm as Items 1, 2, 3 and 5 due to differences in class characteristics. The

TABLE 2

WebCode	Conclusions
	size, weight and configuration of Item 4 are most consistent with bullets typically found loaded in 380 Auto cartridges. The general rifling characteristics indicate the following firearms could have possibly fired Item 4: Hi-Point brand 380 Auto 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. A complete list of the search results will be maintained in the case file.
JKMZCF	As a result of bullets comparison relatives in boxes marked as Item 2, 3 and 5, being studied in relation to those samples (Item 1) obtained from gun Colt MK IV Series 80 Mustang .380 Auto, set uniprocendencia presented, the bullets 2, 3 and 5 were fired by the firearm in question. As received bullet Item 4 conceptualizes that has no uniprocendencia with bullets Item 1, 2, 3 and 5.
JLW6P4	Items 2, 3, and 5 bullets were fired from the same firearm that fired the Item 1 bullets. Item 4 bullet is most consistent with bullets commonly found loaded in 380 Auto caliber cartridges. This bullet was not fired from the same firearm that fired the Item 1 bullets. See the attachment for a list of possible firearm manufactures/origins that may have fired this bullet. This list may not be all inclusive.
JMQVWH	MICROSCOPIC COMPARISON OF EVIDENCE BULLET SPECIMENS Q1B THROUGH Q4B (ITEMS #'S 2 THROUGH 5) WITH TEST FIRED BULLETS (ITEM 1) FROM K1 COLT PISTOL REVEALED: Q1B, Q2B, AND Q4B (ITEM 2,3, AND 5) WERE FIRED WITH K1 COLT PISTOL. DUE TO DIFFERENT RIFLING CLASS CHARACTERISTICS (09L VS. 06L), Q3B (ITEM 4) WAS NOT FIRED WITH K1 COLT PISTOL.
JPVD3Q	The bullets in Exhibits 1,2,3 and 5 were identified as having been fired from the same firearm. The bullet Exhibit 4 was not fired from the same firearm as the bullets in Exhibits 1,2,3 and 5. It is 38 caliber class (380/9mm) and displays class characteristics similar to 380 Auto and 9mm Luger caliber firearms by Hi-Point.
JRJUCY	The fired bullets mentioned in 3.2 marked 222649/16B, C and E were fired from the same firearm that fired the tests mentioned in 3.1. The fired bullet mentioned in 3.2 marked 222649/16D was not fired from the same firearm that fired the tests mentioned in 3.1.
JTDKHD	Test Fired Bullets (1,1,1) and Bullets (2, 3, 4, 5) were microscopically examined and compared. Test Fired Bullets (1, 1, 1) and Bullets (2, 3, 5) are identified as having been discharged from the same firearm based on the observed agreement of their class characteristics and sufficient agreement of their individual characteristics. Bullet (4) is eliminated as having been discharged from the same firearm as Test Fired Bullets (1, 1, 1) and Bullets (2, 3, 5) based on the observed disagreement of class characteristics.
JWG4Q8	I conducted a microscopic comparison of test Item 1 with exhibit Items 2, 3, 4 & 5. I was able to make an ID of Items 2, 3 and 5 which were all a positive match for Item 1. In my opinion exhibit bullets 2, 3 and 5 were fired in the same firearm that produced the test fires of Item 1. Item 4 had differences in both class and individual characteristics and was eliminated as having been discharged in the same firearm as Item 1.
JX8EFE	Items 2, 3 and 5 were identified as having been fired from the same firearm as the Item 1 tests. Item 4 was not fired from the same firearm as the Item 1 tests.
JXT4M2	Items 1, 2, 3, 5 have the same class of rifling and were compared to each other. Sufficient corresponding individual marks were found to conclude that Item 1 fired the bullet Item 2. The result of comparison to Item 3 and Item 5 was inconclusive, there was insufficient individual marks for identification. The bullets Items 3 and 5 were compared to each other and sufficient individual microscopic marks were found to determine that they were fired by a single firearm.



TABLE 2

WebCode	Conclusions
	The bullet Item 4 has a different rifling class than Items 1, 2, 3, 5 and was eliminated as having been fired by the same firearm(s).
JXVTUK	The Item 1 test fires lacked the individual markings necessary for comparison and therefore were unsuitable for comparison. Items 2-3 and 5 could neither be identified nor eliminated as having been fired from the same unknown firearm due to insufficient agreement/disagreement of individual characteristics; however, similar class characteristics were noted. Item 4 was eliminated as having been fired from Item 1 and from the same unknown firearm as Items 2-3 and 5 due to disagreement of discernable class characteristics.
K2M9R7	Items 1, 2, 3 and 5 were fired from the same firearm. Item 4 was fired from a second firearm.
K33G6Z	Sub #001-2 through Sub #001-5 are fired, .38 copper-jacketed, flat-nose bullets, consistent with projectiles found in .380 Auto caliber cartridges. Microscopic comparison of the Sub #001-2, Sub #001-3, and Sub #001-5 evidence bullets with the Sub #001-1 test fires determined that these bullets were fired from the same firearm as the Sub #001-1 test fires at some point in time prior to examination. Comparison of the Sub #001-4 evidence bullet with the Sub #001-1 test fires revealed a disagreement of class characteristics specifically in the number of lands and grooves. This bullet was eliminated as having possibly been fired from the same firearm as the Sub #001-1 test fires. Searching the rifling characteristics of Sub #001-4 against the General Rifling Characteristics Database indicated the item could have been fired from a Hi-Point firearm. This result should not be considered all inclusive. The bullets in this investigation were fired in two different firearms: 1) The suspect Colt MK IV series 80 Mustang (Sub #001-1 test fires, Sub #001-2, Sub #001-3, and Sub #001-5); and 2) an unknown second firearm (Sub #001-4).
K4P86J	Exhibits #2, #3 and #5 were fired from the Exhibit #1 pistol. Exhibit #4 was not fired from the Exhibit #1 pistol. This exhibit has design features consistent with bullets loaded in 380 Auto caliber cartridges and displays rifling characteristics similar to firearms by Hi-Point Firearms, among possible others. Any suspect firearm(s) should be submitted along with the resubmission of Exhibit #4 for comparison purposes.
K94T2X	Item #2: Examined, verified and found to be consistent with being a caliber 38 class, full metal jacket bullet, fired through a barrel having six (6) lands and grooves inclined to the left. The bullet was compared to the test-fired exemplars obtained from the Colt pistol, Item #1. Sufficient corresponding individual barrel signatures were observed to conclude that the bullet was fired from the pistol. Item #3: Same description and examination results and conclusions as Item #2. Item #4: Examined, verified and found to be consistent with being a caliber 38 class, full metal jacket bullet, fired through a barrel having nine (9) lands and grooves inclined to the left. The bullet was compared to the test-fired exemplars obtained from the Colt pistol, Item #1. Differences in the number of land and groove impressions were observed to conclude that the bullet was not fired from the pistol. Item #5: Same description and examination results and conclusions as Item #2.
K9NLRA	After microscopic comparison, it was determined that Items# 2, 3, and 5 bullets were fired from the same firearm as the Item #1 bullets. The identification was based on sufficient agreement of class and individual characteristics of the land impression marks. Item #4 bullet was not fired from the same firearm as the Item #1 bullet. The exclusion was based on differences of class characteristics.
KAU4Q6	The items 3 and 5 fired bullet specimens were fired from the same firearm as the item 1 fired bullet specimens. The item 2 fired bullet specimen bears similar in nature but insufficient microscopic marks to permit identification to the items 1, 3 or 5 fired bullet specimens. The item 4 fired bullet specimen was not fired from the same firearm as the items 1, 2, 3, or 5 fired

TABLE 2

WebCode	Conclusions
	bullet specimens. The general rifling characteristics of the item 4 fired bullet specimen are consistent with firearms marketed by Hi-Point and possibly others.
KBQJ32	<p>3. On 2016-06-15 during the performance of my official duties I received a sealed evidence bag with number PA4001418027 from Case Administration of the Ballistics Section, containing the following item: 3.1 One (1) sealed cardboard box marked "2016 CTS Forensic Testing Program Test No. 16-526: Firearms Examination Sample Pack: F1" containing the following items: 3.1.1 One (1) jewel box marked "Test No. 16-526 Item 1", containing the following exhibits: 3.1.1.1 Three (3) 9mm (.380) calibre fired bullet tests, marked by me 1TB1, 1TB2 and 1TB3 respectively. 3.1.2 One (1) jewel box marked "Test No. 16-526 Item 2", containing the following exhibit: 3.1.2.1 One (1) 9mm (.380) calibre fired bullet, marked by me "210678/16 2". 3.1.3 One (1) jewel box marked "Test No. 16-526 Item 3", containing the following exhibit: 3.1.3.1 One (1) 9mm (.380) calibre fired bullet, marked by me "210678/16 3". 3.1.4 One (1) jewel box marked "Test No. 16-526 Item 4", containing the following exhibit: 3.1.4.1 One (1) 9mm (.380) calibre fired bullet, marked by me "210678/16 4" 3.1.5 One (1) jewel box marked "Test No. 16-526 Item 5", containing the following exhibit: 3.1.5.1 One (1) 9mm (.380) calibre fired bullet, marked by me "210678/16 5". 4. The intention and scope of this forensic examination comprise the following: 4.1 The examination and identification of fired bullets. 4.2 Microscopic individualization of fired bullets. 5. I examined the fired bullets mentioned in paragraphs 3.1.1.1, 3.1.2.1, 3.1.3.1, 3.1.4.1, and 3.1.5.1 and compared the individual and class characteristics markings transferred to them by firearm components during the firing process using a comparison microscope and found: 5.1 The bullets mentioned in paragraphs 3.1.2.1, 3.1.3.1, and 3.1.5.1 were fired from the same firearm that fired the bullets mentioned in paragraph 3.1.1.1. 5.2 The bullet mentioned in paragraph 3.1.4.1 was not fired from the same firearm as the bullets mentioned in paragraph 5.1.</p>
KBU28R	<p>The three submitted fired projectiles, Item 2, 3 &amp; 5, were all fired from the same firearm as the submitted test fire projectiles, Item 1, reported to be a Colt MK IV Series 80 Mustang .380 Auto pistol. Item 4 has been eliminated as having been fired from the same firearm as the test fired projectiles, Item 1. Item 4 is most likely a .380 Auto caliber projectile based on diameter and weight. It has nine lands and grooves that are well defined with a left twist. A search of the FBI GRC database for a list of possible firearms, these would include but not limited to: Hi-Point.</p>
KC8QCP	<p>The Items 1, 2, 3 and 5 Bullets were all fired from the same Firearm. The Item 4 Bullet was not fired from the same firearm as the Items 1, 2, 3 and 5 Bullets.</p>
KKG67E	<p>The bullet recovered from the victim, bounded as Item 2, and the two bullets found in the wall (first) and the snack display, bounded as Item 3 and Item 5 respectively, were fired by the Colt MK IV Series 80 Mustang .380 Auto handgun. The bullet recovered from the wall (second) at the scene bounded as Item 4 was shot by a Colt .380 caliber Auto barreled with five grooves and five lands of rotation to the left handgun; this bullet was not fired by the Colt MK IV Series 80 Mustang .380 Auto handgun.</p>
KLAX2X	<p>After physical and microscopic examination of items 1-5, I have found that projectiles 2 and 3 have the same class characteristics as the known items from box 1 (caliber, land width, groove width, number of land/grooves, direction of twist). They also have sufficient quantity and quality of individual markings (striations) in all the land impression areas for a positive identification. After physical and microscopic examination of items 1-5, I have found that projectile 4 does not have the same class characteristics as the known items from box 1 (caliber, land width, groove width, number of land/grooves, direction of twist). Therefore this item is excluded as being fired from the same firearm as the items in box 1. After physical and microscopic examination of items 1-5, I have found that projectile 5 has the same class characteristics as the known items from box 1 (caliber, land width, groove width, number of land/grooves,</p>

TABLE 2

WebCode	Conclusions
	direction of twist). However it does not have sufficient quantity and quality of individual markings (striations) for a positive identification. It is inconclusive whether item 5 was fired from the same firearm as the test fires from box 1.
KMNBWL	Examinations showed that the Item #2, Item #3 and Item #5 bullets were discharged from the same firearm that discharged the Item #1 bullets. Examinations showed that the Item #4 bullet was not discharged from the same firearm that discharged the Item #1 bullets.
KX8PW4	Items 2, 3 and 5 were identified as having been fired from the recovered firearm that produced Item 1. Item 4 was eliminated as having been fired from the same firearm that fired Item 1. Item 4 is a 38/9mm caliber class bullet and was fired from a firearm having nine (9) lands and grooves with a left hand twist. Using the FBI's General Rifling Characteristics (GRC) database, a list of best possible source firearms was generated. One manufacturer, Hi-Point Firearms, was listed as capable of firing Item 4. This list is not all inclusive and any suspect firearms should be submitted for comparison.
KYXZLB	The recovered questioned bullets labeled as Item 2, 3 and 5, were fired by the same firearm used to recover the known bullets (Item 1). The questioned bullet, Item labeled as No. 4 was fired by a firearm(s) different from that used to collect the known fire projectiles (Item 1).
L2NAJJ	Items 2-3 and 5 were fired in the same firearm as Item 1 (identification). This conclusion was verified by Firearms Examiner (Name). Item 4 was not fired in the same firearm as Item 1 (elimination). This conclusion was verified by Firearms Examiner (Name).
L7XMA6	Items #1.1-1.3 were submitted as known test fires of a .380 Auto caliber pistol, Colt, Model MK IV Series 80 Mustang using Winchester Train & Defend .380 Auto caliber cartridges. Items #1.1-1.3 were fired from a firearm barrel rifled with six lands and grooves, left twist. Item #2, Item #3, and Item #5 are bullets fired from a firearm barrel rifled with six lands and grooves, left twist, The weight and diameter of these items are consistent with being within the 38 family caliber of bullets, which does include, but not limited to, 380 Auto caliber. Items #2, 3 and 5 were microscopically compared to the ItemS #1.1-.1.3 bullets (known test fires) and were identified as having been fired from the same firearm barrel. Item #4 is a bullet fired from a firearm barrel rifled with nine lands and grooves, left twist. The weight and diameter of Item #4 is consistent with it being within the 38 family caliber of bullets, which does include, but not limited to, 380 Auto caliber. Due to a difference in class characteristics, Item #4 was eliminated (not fired) as having been fired from the same firearm barrel as Items #1.1-1.3 bullets (known test fires). Firearms which produce rifling characteristics like those on Item #4 include, but may not be limited to, firearms marketed by Hi-Point. This information is to be used as an investigative lead only so other makes and models should not be excluded.
LAGRUL	Tool marks observed on Items 2, 3 and 5 (fired bullets) are identified as having been produced by a common source/tool. However due to potential subclass, Items 2, 3 and 5 are inconclusive as having been fired from Item 1 (the firearm which produced the submitted test-fired bullets), or from the same firearm. The characteristics observed potentially lack sufficient individuality for identification to a single firearm. The submission of the suspected firearm is necessary for further examination. Item 4 (fired bullet) is eliminated as having been fired from Item 1 (the firearm which produced the submitted test-fired bullets), as well as Items 2, 3 and 5 (fired bullets). There are differences in class characteristics (the number of lands/grooves and width of grooves).
LAYXVW	The submission 002-02, 003-03, and 005-05 projectiles were identified as having been fired from the same firearm that fired the submission 001-01 test fires. The submission 004-04 projectile was eliminated as having been fired from the same firearm that fired the projectiles in submission 001-01, 002-02,003-03, and 005-05 due to differences in class characteristics.

TABLE 2

WebCode	Conclusions
	Firearms that could have fired the submission 004-04 projectile include, but are not limited to firearms manufactured by Hi-Point. Other possibilities may also exist.
LCEHPY	From the sample that had been received, it can be concluded that each bullet consists of .380 caliber ammunition and the rifling type for each bullet is "cut or button" which give the land and groove mark also the characteristics on the bullet for ballistic test. Three bullet in item 1 had the same characteristics and can be defined had been fired from the same gun which are Colt MK IV Series 80 Mustang handgun that had been recovered in the crime scene. The comparison between each bullet in item 1 and the bullet in item 2, 3 and 5 give the result that all bullet have same characteristics, therefore we can concluded that bullet in item 1, 2, 3 and 5 are been fired in the same firearm which are Colt MK IV Series 80 Mustang. The comparison between each bullet in item 1 and the bullet in item 4 give the result that bullet in item 4 did not have same characteristics with each bullet in item 1, which give the information another handgun been use in the case.
LJLWJG	Item 4 was determined to be a 38/9mm caliber class bullet fired from a firearm with a rifling system of nine lands and grooves with a left twist. Firearms with a similar rifling system include but are not limited to: Hi-Point manufactured firearms. This list is not all-inclusive. Items 2, 3, and 5 were microscopically examined and identified as having been fired from Item 1 firearms based on agreement of the combination of individual characteristics and all discernible class characteristics. Item 4 was eliminated as fired from Item 1 due to difference of class characteristics.
LJXKW2	The bullets in Items 001-02, 001-03, 001-04 and 001-05 were microscopically examined in conjunction with the test fired bullets submitted in Item 001-01. Based on these comparative examinations, the following determinations were made: The bullets in 001-02, 001-03 and 001-05 were identified as having been fired through the barrel of the same firearm as 001-01. The bullet in 001-04 was eliminated as having been fired through the barrel of the same firearm as 001-01 based on differences in class characteristics.
LND43P	Items 1, 2, 3 and 5 were fired through the same rifled gun barrel. Item 4 was fired through a rifled gun barrel that is different from the one Items 1, 2, 3 and 5 were fired.
LNWMC3	Items 2, 3 & 5 were all identified as having been fired from the same firearm that fired Item 1 based on sufficient agreement of class and individual characteristics. Item 4 was eliminated as having been fired from the same firearm that fired Item 1 based upon significant disagreement of class characteristics.
LNYDHK	Items 1 – 5 were physically examined and microscopically compared with each other. From these comparisons, the following conclusions were reached: Matching individual identifying characteristics were found and it was concluded that Items 1, 2, 3, and 5 were all fired by the same firearm. Sufficient differences in class characteristics were found to conclude that Item 4 was not fired by the firearm that fired Items 1, 2, 3, and 5. Item 4 was most consistent with bullets loaded into some 380 Auto caliber cartridges. Marks of value were found, and it was concluded that Item 4 may be suitable for identification with a specific firearm (barrel) and/or another fired bullet(s). Item 4 had been fired through a conventionally rifled barrel with 9 grooves, left twist. Currently, the only known manufacturer of firearms with the rifling specifications found on Item 4 is Hi-Point Firearms. This list is not all-inclusive and is provided for investigative assistance only. If a non-listed firearm is recovered, contact the examiner listed below prior to submitting the firearm for examination.
LNZ82Q	The test fired bullets (Exhibits 1A-1C) were microscopically compared to each other. A test fired bullet (Exhibit 1A) was microscopically compared to the other fired bullets (Exhibits 2, 3, 4 and 5). Based on an agreement of class characteristics and sufficient agreement of individual

TABLE 2

WebCode	Conclusions
	characteristics, Exhibits 2, 3 and 5 were fired from the same firearm as Exhibits 1A-1C. Based on a difference in class characteristics, Exhibit 4 was not fired from the same firearm as Exhibits 1, 2, 3 and 5. The manufacturer of the firearm that could have fired Exhibit 4 includes, but is limited to, 380 Auto or 9mm caliber Hi-Point pistols. This does not preclude the possibility that another make not listed was used.
LPMXZA	The questioned bullets, identified as Item 2, Item 3 and Item 5 were constituent part of the same .380 auto caliber cartridges that were fired by the suspicious weapon, Colt MK IV Serie 80 Mustang.
LRC876	The bullets marked 1A to 1C, 2, 3 and 5 were fired from one firearm. The bullet marked 4 was not fired from the same firearm as bullets 1A to 1C, 2, 3 and 5.
LT82T2	Items 2, 3, and 5 were microscopically compared to test-fired bullets from the Colt pistol and subsequently intra-compared. There was agreement with general rifling characteristics; however, due to a lack of reproducibility of individual characteristics, they could not be identified or eliminated as having been fired in the Colt pistol or the same unknown firearm. The findings were inconclusive. Based on significant disagreement with general rifling characteristics, Item 4 could not have been fired in the Colt pistol.
LUWBH9	Item 2, Item 3, and Item 5 are consistent with being fired in the same firearm as the Item 1 test fires. Item 4 is inconsistent in class characteristic rifling configuration and was not fired in the same firearm as the Item 1 test fires.
LVTRU7	Examination and microscopic comparison of the submitted bullets (Items 2-5) with test bullets (Item 1) revealed sufficient microscopic detail to conclude that the submitted bullets (Items 2,3 and 5) were fired through the same barrel as the test bullets (Item 1). The submitted bullet (Item 4) was excluded as having been fired from the same barrel as the test bullets (Item 1) due to different general rifling characteristics.
LW7CP2	Items 2, 3 and 5 were identified as having been fired in the same firearm as Item 1. The identifications were confirmed by a qualified firearms examiner. Item 4 was eliminated from having been fired in Item 1 based on different class characteristics.
LXWMD9	Identification: Based on the agreement of discernible class characteristics and sufficient matching individual detail, the fired bullets B-2(Item 2), B-3(Item 3), and B-5(Item 5) were identified as having been fired from the same firearm as the fired bullets in Item 1. Elimination: Based on differences of class characteristics, the fired bullet B-4(Item 4) was eliminated as having been fired from the same firearm as the fired bullets in Item 1.
LYR6FA	Bullets (2, 3, 5), compared to test fire bullets (1.1 - 1.3), are identified as having been fired from the above gun based on the observed agreement of their class characteristics and sufficient agreement of their individual characteristics. Bullet (4), compared to bullets (2, 3, 5) and test fire bullets (1.1 - 1.3), is eliminated as having been fired from the above gun based on the observed disagreement of class characteristics.
M6JMHT	[No Conclusions Reported.]
M79WMM	The projectiles in Items 2, 3 and 5 were fired in the same gun that fired the projectiles in Item 1. The projectile in Item 4 was not fired in the gun that fired the projectiles in Item 1.
M93HKK	1. Examinations showed that Item 2, Item 3 and Item 5 were discharged from the same firearm that discharged the test fired bullets in Item 1. 2. Examinations showed that Item 4 was not discharged from the same firearm that discharged the bullets in Item 1, Item 2, Item 3 and Item 5.

TABLE 2

WebCode	Conclusions
MACR8Q	The projectiles in Items 2, 3 and 5 were fired in the same gun that produced the test fires in Item 1. The projectile in Item 4 was not fired in the same gun that produced the test fires in Item 1.
ME6RPR	Item 1 is three 380 caliber fired bullets exhibiting six lands and grooves with a left twist which were reportedly test fired from a Colt, model MK IV Series 80 Mustang, 380 Auto caliber semiautomatic pistol. Items 2, 3, and 5 are 380 caliber fired bullets exhibiting six lands and grooves with a left twist. Item 4 is a 38 class fired bullet exhibiting nine lands and grooves with a left twist. Items 2, 3, and 5 were identified as having been fired from the same firearm that fired Item 001. Based on class characteristics, Item 4 was eliminated as having been fired from the same firearm that fired Item 1. A list of firearms that could have fired Item 4 would include Hi-Point Firearms and any other firearm having similar caliber and rifling characteristics. If a specific firearm related to this investigation is recovered, there may be adequate striae for a comparison.
MV7MV4	The bullets marked 2, 3 and 5 were fired from the firearm (known). The bullet marked 4 were not fired from the firearm (known.)
MVCTJT	The Item 2, Item 3, and Item 5 bullets were compared to the Item 1 test bullets fired from the submitted pistol and were determined to have been fired from that pistol. The Item 4 bullet was compared to the Item 1 test bullets fired from the submitted pistol and was determined to have not been fired from that pistol due to differences in class characteristics. The Item 4 bullet was fired from a .380 Auto caliber firearm containing nine lands and grooves with left twist. Firearms chambered for this caliber with these general rifling characteristics includes, but is not limited to, pistols manufactured by Hi-Point.
MYCWEM	The test and evidence bullets were microscopically inter-compared with the following results: Three of the bullets (Items 2,3 and 5) were identified as having been fired from the Colt pistol (Test bullets Item 1) The remaining bullet (Item 4) had not been fired from the Colt pistol (Test bullets Item 1).
MZK9TH	The fired bullets of #2, #3 and #5 were microscopically identified as having been fired in the Colt pistol. The fired bullet of #4 was eliminated as having been fired from the Colt due to differences in class characteristics.
N4KWPJ	Microscopic examination and comparison revealed that bullets from (Items 2, 3 & 5) were fired from the barrel of the Colt MK IV series 80 Mustang .380 Auto caliber pistol, which fired the three test-fired bullet exemplars (Item1). Based on a difference in class characteristics, it was determined that the bullet (Item 4) was not fired from the barrel of the Colt MK IV Series 80 Mustang .380 Auto caliber pistol, which fired the three test-fired bullet exemplars (Item 1). Physical and microscopic examination of the bullet (Item 4) revealed that it is consistent with, but not limited to, being fired from the barrel of a Hi-Point model CF, 380 Auto caliber pistol or the barrel of a Hi-Point model CF380, 380 Auto caliber pistol. Any 38 caliber class firearm recovered during the course of this investigation should be submitted to the Firearm & Toolmark Unit of the [City] Police Crime Laboratory for examination.
NMEDB2	The questioned bullets of items 2,3 and 5 had all been discharged by the recovered firearm. The questioned bullet of item 4 had not been discharged by the recovered firearm.
NPLV8B	Bullet comparison showed that: a) the three bullets in the exhibits marked "Item 2", "Item 3" and "Item 5" were fired from the same firearm that fired the three bullets in the exhibit marked "Item 1". b) the bullet in the exhibit marked "Item 4" was not fired from the firearm that fired the three bullets in the exhibit marked "Item 1".
NPZ73A	Items 2, 3, and 5 were identified as having been fired from the same firearm as Item 1. Item 4

TABLE 2

WebCode	Conclusions
	was not fired from the same firearm as Items 1, 2, 3, and 5. The design features of the bullet are consistent with those loaded in 380 Auto caliber cartridges. The bullet displays rifling characteristics similar to firearms by Hi-Point Firearms.
NWDHU2	Based on agreement of discernible class characteristics and sufficient matching individual detail, the fired bullets from Items 1, 2, 3 and 5 were identified as having been fired from the same firearm. Based on significant disagreement of class characteristics, the fired bullet, Item 4, could not have been fired from the same firearm as the fired bullets from Items 1, 2, 3 and 5.
NWL8F2	Microscope comparisons of Item 1 (Test fires) to Items 2-3-4-5 disclosed the following: Items 2 & 3 disclosed the same class & individual characteristics as Item 1 and were fired from the same firearm. Item 4 disclosed different class characteristics from Item 1; therefore was not fired from the same firearm. Item 5 disclosed different individual characteristics from Item 1; therefore was not fired from the same firearm.
NXAX8X	Items 2, 3 and 5 were identified as having been fired from the item 1 (Colt MK IV Series 80) pistol. Item 4 was eliminated as having been fired from the Item 1 (Colt MK IV Series 80) pistol based upon differences in class characteristics (unknown firearm 'A')
NZ739L	Specimen #1-(3) .380 Auto caliber test bullets fired from a .380 Auto caliber Colt semiautomatic pistol marked #1. Examined the three specimens marked #2, #3, and #5. They weigh 95.8, 94.8, and 95.1 grains respectively and each indicates six lands and six grooves with a left hand twist. They are .380 Auto caliber discharged full metal jacketed bullets. Examined the specimen marked #4. It weighs 95.0 grains and indicates nine lands and nine grooves with a left hand twist. It is a .380 Auto caliber class discharged full metal jacketed bullet. Compared the three test bullets marked #1 against the three bullets marked #2, #3 and #5 with positive results (Identification). The three bullets marked #2, #3 and #5 were discharged from the Colt pistol. Compared the three bullets marked #1 against the bullet #4 with negative results. (Elimination). The bullet marked #4 was not discharged in the Colt pistol.
P2RBRL	1. PISTOL COLT MK IV SERIES 80 MUSTANG .380 AUTO SERIAL NUMBER ?????? FIRED BULLETS THAT INSCRIBED ITEM#2 AND ITEM#3. 2. PISTOL COLT MK IV SERIES 80 MUSTANG .380 AUTO SERIAL NUMBER ?????? DID NOT FIRED BULLET THAT INSCRIBED ITEM#4 . 3. BULLET THAT INSCRIBED ITEM#5 have the same class characteristics and some agreement of individual characteristics but insufficient for an identification to COLT MK IV SERIES 80 MUSTANG .380 AUTO PISTOL NUMBER ??????
P9P6JR	2.1 I examined the fired bullet (exhibits) mentioned in paragraph 1 and compared the individual and class characteristics markings on them using a comparison microscope with test bullets (item 1) and found that: 2.2 Exhibits bullets marked item 2A, 3B, 5D were fired from the same firearm that fired test bullets marked 1TB1, 1TB2, 1TB2. (A Cole MK IV Series 80 Mustang .380 Auto handgun). 2.3 Exhibit bullet marked item 4C was not fired from the same firearm that fired tests bullets marked 1TB1, 1TB2, 1TB2 (A Cole MK IV Series 80 Mustang .380 Auto handgun).
PBW8PW	1. A microscopic comparative examination of Item #3 (bullet B-2) and Item #5 (Bullet B-4) against each other and Item #1 (pistol P-1) disclosed that Item #3 and Item #5 were discharged from Item #1. 2. A microscopic comparative examination of Item #2 (Bullet B-1) against item #3 (bullet B-2), Item #5 (Bullet B-4) and Item #1 (pistol P-1) disclose that Item 2 exhibit the same class characteristics, however, there were insufficient individual corresponding microscopic markings to submit a positive identification (Inconclusive) 3. Item #4 (bullet B-3) was not discharged from Item #1 (pistol P-1) due to difference in class characteristics (8L vs 6L).

TABLE 2

WebCode	Conclusions
PEG3HG	Items 2, 3 and 5 were discharged from the same firearm as Item 1. Item 4 was not discharged from the same firearm as Item 1.
PN429M	Exhibits 2, 3, and 5 are nominal 9mm caliber fired full metal jacket bullets with 6 lands and grooves with a left twist. Exhibit 4 is a nominal 9mm caliber fired full metal jacket bullet with 9 lands and grooves with a left twist. Exhibits 2, 3 and 5 were microscopically compared with the test bullets of Exhibit 1, and they were identified as having been fired from the same firearm. Exhibit 4 has different class characteristics than the test bullets of Exhibit 1, therefore, it is eliminated as having been fired from the firearm that fired the Exhibit 1 bullets. Firearms with similar general rifling characteristics (GRC) to Exhibit 4 include, but are not necessarily limited to the following: Hi-Point firearms.
PN7XFC	I found: a) The characteristic marks on the recovered bullets Item 2, Item 3 and Item 5 to be similar to the characteristic marks from the the bullets fired using the recovered firearm Item 1. b) The characteristic marks on the recovered bullet Item 4 to be dissimilar to the characteristic marks from the bullets fired using the recovered firearm Item 1. Therefore, I am of the opinion that: a) Recovered bullets Item 2, Item 3 and Item 5 were discharged from the same firearm as the known fired bullets Item 1. b) Recovered bullet Item 4 was not discharged from the same firearm as the known fired bullets Item 1.
PRZ2WW	The Item 001-02 through 001-05 bullets were microscopically compared to the 001-01TF bullets with the following results: Items 001-02, 001-03 and 001-05 were identified as having been fired through the barrel of the same firearm as the Item 001-01TF bullets. Item 001-04 was eliminated as having been fired through the barrel of the same firearm as the Item 001-01TF bullets.
PTFCYV	Item 1 consisted of three fired nominal .38 caliber full metal jacket bullets reportedly fired from the recovered firearm (known). All three bullets were fired by a gun with six lands and grooves of conventional left twist rifling. Item 3 was a nominal .38 caliber full metal jacket bullet reportedly recovered from the wall at the scene (questioned). The bullet was fired by a gun with six lands and grooves of conventional left twist rifling. Item 3 was compared to the test fired bullets from the recovered firearm (item 1) 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 a nominal .38 caliber full metal jacket bullet reportedly recovered from the wall at the scene (questioned). The bullet was fired by a gun with nine lands and grooves of conventional left twist rifling. Significant difference in class characteristics (9 left vs. 6 left) were observed to conclude that item 4 was not fired from the same firearm as the known bullets (item 1). Item 5 was a nominal .38 caliber full metal jacket bullet reportedly recovered from the snack display (questioned). The bullet was fired by a gun with six lands and grooves of conventional left twist rifling. Item 5 was compared to the test fired bullets from the recovered firearm (item 1) using a comparison microscope. Sufficient agreement of class and individual characteristics was observed to conclude that item 5 was fired from the same firearm as the known bullets (item 1). Item 2 was a nominal .38 caliber full metal jacket bullet reportedly recovered from the victim (questioned). The bullet was fired by a gun with six lands and grooves of conventional left twist rifling. Item 2 was compared to the test fired bullets from the recovered firearm (item 1) and items 3 and 5 using a comparison microscope. Sufficient agreement of class and individual characteristics was observed to conclude that item 2 was fired from the same firearm as the known bullets (item 1).
PTH27E	Items 2, 3, and 5 were identified as having been fired from the same firearm that fired the test fires in item 1 based on agreement of the combination of individual characteristics and all discernable class characteristics. Item 4 was eliminated as having been fired from the same



TABLE 2

WebCode	Conclusions
	firearm that fired the test fires due to disagreement of discernable class characteristics.
PV26Q6	The evidence in items 1 through 5 was analyzed by physical and microscopic examination. The three (3) bullets in items 2, 3, and 5 were determined to have been fired from the weapon that fired the three (3) reference bullets in item 1. The bullet in item 4 was determined not to have been fired from the weapon that fired the three (3) reference bullets in item 1. The bullet in item 4 was a 380 caliber bullet which had been fired from the barrel of a weapon rifled with nine (9) lands and grooves, left twist. Further analysis of the bullet in item 4 is pending submission of another weapon for additional comparison.
PWWUX	Microscopic comparison made between test shot Bullets from the recovered Weapon (Item 1) and four submitted recovered Bullets Items 2, 3, 4, & 5 with the following results: POSITIVE - Items 2, 3, & 5 were fired from the recovered Colt model MK IV Series 80 Mustang. Negative - Item 4 was examined and observed to have nine sets of land and groove impressions with a Left twist (9L) and is incompatible with the recovered Weapon.
Q27W2M	Examination of Item# 1 revealed three (3) fired 380 caliber full metal jacket bullets reportedly test fired through the barrel of the recovered Colt semi-automatic pistol. Examination of the three (3) fired full metal jacket bullets (Items# 2, 3, & 5) revealed they are 380 caliber and fired through a firearm barrel rifled with six (6) lands and grooves with a left hand twist. Further examination of Items# 2, 3, & 5 with the test fired bullets (Item# 1) reportedly from the Colt semi-automatic pistol revealed Items # 2, 3, & 5 were fired through the barrel of the Colt semi-automatic pistol. Examination of the one (1) fired full metal jacket bullet (Item# 4) revealed it is 380 caliber and fired through a firearm barrel rifled with nine (9) lands and grooves with a left hand twist.
Q6KRGK	Items 1, 2, 3, & 5 were fired in the same firearm - the Colt MK IV Series 80 Mustang. Item 4 was fired in a second firearm. Item 4 is 380 Auto caliber and was fired in a firearm with conventional 9 left rifling. A list of makes of firearms that could have fired this item includes, but is not limited to: Hi-Point.
QAVUGU	From the sample that had been received, it can be concluded that each bullet consists of .380 caliber ammunition and the rifling type for each bullet is "cut or button" which give the land and groove mark also the characteristics on the bullet for ballistic test. Three bullet in item 1 had the same characteristics and can be defined had been fired from the same gun which are Colt MK IV Series 80 Mustang handgun that had been recovered in the crime scene. The comparison between each bullet in item 1 and the bullet in item 2, 3 and 5 give the result that all bullet have same characteristics, therefore we can concluded that bullet in item 1, 2, 3 and 5 are been fired in the same firearm which are Colt MK IV Series 80 Mustang. The comparison between each bullet in item 1 and the bullet in item 4 give the result that bullet in item 4 did not have same characteristics with each bullet in item 1, which give the information another handgun been use in the case.
QEAH4D	The recovered questioned bullets (Item #2, #3 and #5) match the test fires (Item #1) from the Colt MK IV Series 80 Mustang .380 Auto handgun. So these bullets (Item #2, #3 and #5) were fired in that particular firearm as the known bullets (Item #1). The recovered questioned bullet (Item #4) has different rifling class characteristics than the others bullets (Item #2, #3 and #5). So it's mean that this bullet (Item #4) was fired in another firearm.
QGK8K4	Item#1, Three test fires from known firearm (submitted colt mk IV series 80) were submitted for comparison to Items #2, 3, 4, 5. Item #2, Item #3 and Item #5 were identified as having been fired from the submitted firearm (Test Fires Item #1) based on sufficient agreement of class and individual characteristics. Item #4 is eliminated as having been fired from the submitted firearm. The source of bullet (Item #4) has not yet been identified.

TABLE 2

WebCode	Conclusions
QHUCXR	2.1 Exhibit bullets marked 222666/16 (2); (3); and (5) were fired from the same firearm that fired bullets marked 666 TC1-TC3. 2.2 Exhibit bullet marked 222666/16 (4) was not fired in the same firearm as bullets marked 666 TC1-TC3.
QQLUCZ	The fired bullets (Items #2, 3, and 5) were identified as having been fired through the barrel of the firearm (Item #1). Due to differences in class characteristics, the fired bullet (Item #4) could not have been fired through the barrel of the firearm (Item #1).
QTVUFM	The Item 2, 3, and 5 fired bullets were fired from the same firearm that fired the Item 1 test fires. These identifications are based on sufficient agreement of the combination of individual characteristics and all discernable class characteristics. The Item 4 fired bullet was not fired from the same firearm that fired the Item 1 test fires. This elimination is based on differences in class characteristics.
QU6X7R	Exhibits listing: 1 - (Item 1) Three bullets fired using the recovered firearm (known). 2 - (Item 2) Bullet recovered from victim (questioned). 3 - (Item 3) First bullet recovered from the wall at the scene (questioned). 4 - (Item 4) Second bullet recovered from the wall at the scene (questioned). 5 - (Item 5) Bullet recovered from the snack display at the scene (questioned). Findings: 1. Comparison microscope examinations were conducted on the evidence listed above. The findings are the following: a. Exhibits 2, 3, 4, and 5 are .38 caliber class spent projectiles normally loaded in a .380 Auto cartridge. b. Exhibits 2, 3, and 5 were fired from the same firearm as Exhibit 1, the known spent projectiles. c. Exhibit 4 was eliminated from being fired from the same firearm as Exhibit 1, the known spent projectiles, based on a difference in class characteristics. Exhibit 4 was fired from a second firearm. 2. The following is an investigative lead only and not intended to exclude all other makes of firearms. Based on class characteristics of Exhibit 4, the possible firearm is a .380 Auto Hi-Point pistol.
QU7MN4	Microscopic comparisons of the three (3) fired bullets from Items #2, #3, and #5 with the submitted test fired bullets from Item #1 revealed matching barrel engraved striations. This finding confirms Items #2, #3, and #5 were fired from the same firearm as the submitted test fired bullets from Item #1. Microscopic comparisons of the fired bullet from Item #4 with the submitted test fired bullets from Item #1 revealed differences in class characteristics (number of lands and grooves). This finding confirms Item #4 was not fired from the same firearm as the submitted test fired bullets from Item #1. Based on the class characteristics observed, the bullet from Item #4 is consistent with having been fired from a Hi-Point pistol or carbine. However, other possibilities may exist.
QWD2VA	Item 1,2,3,5 - These bullets were all fired from the same unknown firearm. Item 4 - The bullet was not fired from the same firearm as the Items 1,2,3,and 5 bullets. The bullet is 38 caliber class (380/9mm) and displays rifling characteristics similar to firearms by Hi-Point.
QZBEYL	The submitted fired bullets (Items 2, 3, and 5) were identified as having been fired from the same firearm as the submitted test fires (Item 1) reportedly fired from the Colt MK IV series Mustang semiautomatic pistol. The submitted fired bullet (Item 4) was eliminated as having been fired from the same firearm as the submitted test fires (Item 1) reportedly fired from the Colt MK IV series Mustang semiautomatic pistol, due to difference in class characteristics.
R2MED8	The bullets identified as: Item 2, Item 3 and Item 5 were fired by the suspicious gun pistol Colt MK IV 80 Mustang .380 Auto Series.
R439PY	Fired bullets marked 259310/16 2; 3 and 5 were fired from the same firearm as the test fired bullets marked 259310/16 / T1 to T3. Fired bullet 259310/16 4 was not fired from the firearm that produced tests marked 259310/16 / P1 - P3.

TABLE 2

WebCode	Conclusions
R49ECN	The Item 1 bullets were compared to each other and were verified as having been fired from the same firearm. The Item 2, Item 3, Item 4, and Item 5 bullets were compared to the Item 1 bullets. The Item 2, Item 3, and Item 5 bullets were determined to have been fired from the same firearm as the Item 1 bullets. The Item 4 bullet was determined to have not been fired in the same firearm as the Item 1 bullets due to differences in class characteristics. The Item 4 bullet was fired from a .380 caliber firearm with a rifled barrel containing nine lands and grooves, left twist. Firearms chambered for this caliber with these general rifling characteristics include pistols manufactured by Hi-Point.
R63ZAL	Results of Examination: Comparison of test fired bullets (Item 1) to Items 2, 3, and 5 revealed the presence of matching features. This indicates that Items 2, 3, and 5 are consistent with having been fired in the Colt .380 semi-auto pistol. Comparison of test fired bullets (Item 1) to Item 4 revealed an elimination based on class characteristics difference. Item 4 was not fired in the Colt .380 semi-auto pistol.
R88T2Y	Items 2,3 and 5 were identified, within the limits of practical certainty* as having been fired by the same firearm as the Item 1 test fired bullets**. Item 4 was not fired by the same firearm as fired the Item 1 test fired bullets**. Item 4 was possibly fired by a .380 Auto calibre Hi-Point semi-automatic pistol. Two firearms are represented by Items 2,3,4 and 5. * 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. ** Information received by this lab indicates that the Item 1 bullets were test fired by a .380 Auto calibre Colt MK IV Series 80 Mustang semi-automatic pistol.
R8PQ96	Deformed bullets (2, 3, 5) and test fires (1.1-1.3) were fired from the above listed firearm, lab item# (1) based on the observed agreement of their class characteristics and sufficient agreement of their individual characteristics. Deformed bullet (4) was ELIMINATED from being fired from the above listed firearm, lab item# (1) based on the observed disagreement of their class characteristics.
R8RAFF	The bullets Exhibits 1, 2, 3, and 5 were identified as having been fired from a single firearm. The bullet Exhibit 4 was fired from a second firearm. It is 38 caliber class (380/9mm)and displays rifling characteristics similar to firearms by Hi-Point.
RAW4Q7	The Item 2, 3, and 5 bullets were identified as having been fired from the same firearm as the Item 1 bullets. The Item 4 bullet was not fired from the same firearm as the Item 1 bullets. The Item 4 bullet has design features consistent with bullets loaded in 380 Auto caliber cartridges and displays rifling characteristics similar to pistols by Hi-Point.
RC6AC8	The forensic laboratory, of the [Country's Laboratory], section of physics (firearm laboratory) performed the investigations of the items (sent by CTS) and came to the following results: The forensic material consists of in total 7 bullets (.380 Auto) with following description: Item 1: Three bullets fired using the suspect's handgun (known) Items 2 – 5 Four bullets recovered at the crime scene (questioned) The fired bullet (item 4) shows no correlating traces to the test-fired bullets. Also the general rifling characteristics are different. The bullets from the crime scene (item 2, 3 and 5) show correlating traces to each other and were fired from the seized firearm from the suspect. In conclusion, the carried out investigations showed, that three bullets (item 2, 3 and 5) from the crime scene were fired from the seized firearm.
RDYZHL	The three (3) fired bullets, items 2, 3, and 5, were each identified as having been fired in the

TABLE 2

WebCode	Conclusions
	Colt pistol, item 1. The fired bullet, item 4, was eliminated as having been fired in the Colt pistol, item 1, based on a difference in class characteristics (number of lands and grooves). The fired bullet, item 4, is consistent with bullets in a nominal .38 caliber loading, which includes .380 Auto. A GRC of the most likely make/model of firearm used to fire the bullet has been generated.
RETLFJ	The items #2, 3 & 5 projectiles were fired from the same firearm as the item #1 projectiles. The item #4 projectile was not fired from the same firearm as the item #1 projectiles.
RGECE3	Items # 2-3-5 were fired from Item #1 the 380 Auto cal Colt MC IV Series 80 Mustang based on class and individual characteristics- Item #4 was fired from a different gun based on class characteristics-
RHQCBX	i) The characteristic fine striations of the bullet item 2, Item 3 and item 5 to correlate with the characteristic fine striations of the three fired bullets (Item 1). Hence I am of the opinion that Item 2, Item 3 and Item 5 were fired from the the same firearm as the known fired bullets (Item 1). ii) The characteristic fine striations of the bullet (Item 4) do not correlate with the characteristic fine striations of the three fired bullets (Item 1). Hence I am of the opinion that Item 4 was not fired from the same firearm as the known fired bullets (Item 1)
RJ4YTC	One of the test fired bullets (TF 1C) from the Colt pistol and the fired bullet (Item 2) were microscopically examined and compared. There is agreement of their class characteristics. However, there is sufficient disagreement of their individual characteristics to eliminate it as having been fired from the Colt pistol. One of the test fired bullets (TF 1C) from the Colt pistol and the fired bullets (Items 3 and 5) were microscopically examined and compared. Based on the agreement of their class characteristics and sufficient agreement of their individual characteristics, the bullets are identified as having been fired from the Colt pistol. Based on the disagreement of their class characteristics, the bullet (Item 4) is eliminated as having been fired from the Colt pistol and the firearm that fired the bullet (Item 2).
RJ6LXX	1. The three /3/ test fired specimens were microscopically compared to each other to determine whether there was reliable and valid replication of individual characteristics that met the standard of sufficient agreement. As a result of this comparison it is my opinion that the three /3/ known test fired specimens display sufficient agreement of individual characteristics as required by the Theory of Identification Related To Tool Marks. 2. Item 2 was microscopically compared to all three /3/ known test fired specimens and contains sufficient agreement of individual characteristics which are of such a quantity and quality that Item 2 is identified as having been discharged by the same firearm as the test fired specimens, or another firearm which is capable of chambering and discharging Item 2 which would have resulted in the same quantity and quality of individual characteristics that meet the standard of sufficient agreement. 3. Item 3 is a spent projectile containing the same general rifling characteristics (caliber, rifling twist, number of land and groove impressions, and widths of the land and groove impressions); there are some areas on Item 3 which display similar individual characteristics as the known test fired standards however, due to the lack of sufficient agreement of these individual characteristics Item 3 can neither be conclusively identified nor eliminated. 4. Item 4 is eliminated as having been fired by the same firearm as the known test fired specimens due to disagreement of general rifling characteristics; this disagreement is related to the significant differences in the widths of the land and groove impressions. 5. Item 5 is a spent projectile containing the same general rifling characteristics (caliber, rifling twist, number of land and groove impressions, and widths of the land and groove impressions); there are some areas on Item 5 which display similar individual characteristics as the known test fired standards however, due to the lack of sufficient agreement of these individual characteristics Item 5 can neither be conclusively identified nor eliminated.

TABLE 2

WebCode	Conclusions
RJNDLV	Bullet Analysis: Methodology-Comparison Microscopy: Items 1A, 1B and 1C, the bullets identified to be test fired from recovered firearm, were fired through the barrel of the same firearm based upon corresponding class and individual microscopic characteristics. Items 2, 3 and 5, the bullets, were fired through the barrel of the same firearm as Items 1A, 1B and 1C, the bullets identified to be test fired from recovered firearm, based upon corresponding class & individual microscopic characteristics. Item 4, the bullet, was not fired through the barrel of the same firearm as Items 1A, 1B and 1C, the bullets identified to be test fired from recovered firearm, or Items 2, 3 and 5, the bullets, based upon different class characteristics.
RKWKQ	The Item 2, 3, and 5 bullets were identified as having been fired by the same firearm as the Item 1 bullets (listed as being test fires from a Colt pistol), based on microscopic comparison and the correspondence of individual characteristics. The Item 4 bullet was not fired by this same firearm, based on different class characteristics. The Item 4 bullet displays a rifling pattern known to be used in Hi-Point brand firearms.
RLA7C4	The bullets from Items 2, 3 and 5 were fired through the same barrel of Item 1.
RMK79Y	There are sufficient individual markings present to identify items 2, 3, and 5 (bullets) as having been fired item 1 (firearm). Based on class characteristic differences, item 4 (bullet) can be eliminated as having been fired through item 1 (firearm).
RRCFJW	By means of bullet projectiles and its derivatives, microscopic examination and microscopic comparison examinations it was determined that: 1. The pieces of evidence pertaining to the Items 1, 2, 3 and 5, marked E-1 to E-3, E-4, E-5 and E-7 respectively, are .380 caliber, full metal jacket bullets, with six land & groove left twist (L-6)and were fired by the same firearm. 2. The piece of evidence pertaining to the Item 4, marked E-6, is .380 caliber, full metal jacket bullet, with nine land & groove left twist (L-9) and was fired by a firearm.
RW8UY	After microscopic comparison, it was determined that Items #2, 3, and 5 were fired from Item #1 based on sufficient agreement of class and individual characteristics of land impression marks. Item #4 was not discharged from Item #1 base on differences of class characteristics.
RWPB6L	Items 1 through 5 were examined and analyzed using microscopy. The Items 2, 3 and 5 bullets were identified as having been fired from the same firearm that reportedly fired the Item 1 test fired bullets. Item 4 is a caliber 38 class jacketed bullet which was fired from a firearm having a barrel rifled with nine (9) lands and grooves inclined to the left. Firearms that produce general rifling class characteristics like those present on Item 4 include Hi-Point brand firearms chambered to fire either 380 Auto or 9mm Luger cartridges. It is possible another brand of firearm produced these class characteristics and is not listed due to the content of the database searched. This bullet exhibits markings that may be suitable for identification with the firearm from which it was fired. Item 4 was eliminated as having been fired from the same firearm that reportedly fired the Item 1 test fired bullets due to a difference in class characteristics.
RZUN8T	A. The bullets described in items,1, 2 ,3 and 5,are .380 caliber metal case type, with left rifling (L-6)and were fired by the same firearm (suspect's handgun).B. The bullet described in item 4 is .380 caliber, metal case type, with left rifling (L-9) was fired by a firearm and was not fired by the suspect handgun.
T43J7M	Item 2, Item 3, and Item 5 were identified as having been fired from the same firearm as test fires designated Item 1 based on the agreement of a combination of individual characteristics and all discernable class characteristics. Item 4 was eliminated as having been fired from the same firearm as test fires designated Item 1 due to the disagreement of discernable class characteristics.

TABLE 2

WebCode	Conclusions
T4MCWY	the compression microscopic examination reveal that: 1- the three bullets recovered from the scene and submitted in items No 2,3, and 5 has the same groove marks definition and fired from the same fire arm as the known bullets ( item 1). 2- the bullet recovered from the scene and submitted in ( item 4) has different groove marks definition and fired from another fire arm.
T7DCE4	Deformed Bullets (2,3,5) and Test Fires (1,1,1) are identified as having been discharged from the SAME firearm based on the observed agreement of their class characteristics and sufficient agreement of their individual characteristics. Deformed Bullet (4) is eliminated as having been discharged from the same firearm as deformed bullets (2, 3, 5) and Test Fires (1, 1, 1) based on the observed disagreement of class characteristics.
TB3YXF	The test bullets submitted under Item 1 were examined and microscopically compared, and were found to have been fired from the same firearm. Items 2, 3, and 5 were examined and found to be 380 caliber jacketed bullets that exhibited six lands and grooves with a left twist. Items 2, 3, and 5 were microscopically compared to the tests submitted under Item 1. Items 2, 3, and 5 were fired from the same firearm as the test bullets submitted under Item 1. Item 4 was examined and found to be a 380 caliber jacketed bullet that was fired from a firearm having nine lands and grooves with a left twist. Item 4 exhibits characteristics associated with having been fired from a firearm manufactured by Hi-Point. Item 4 was not fired from the same firearm as the tests submitted under Item 1.
TDPPWY	I microscopically compared Items 2, 3 and 5 (bullets) of CTS 16-526 to Items 1A, 1B and 1C (test fired bullets) of CTS 16-526. I identified Items 2, 3 and 5 as being fired as the same firearm as Items 1A, 1B and 1C based on sufficient agreement of individual characteristics within multiple land impressions. Based on different class characteristics, number of lands and grooves, Item 4 (bullet) of CTS 16-526 was fired in a second firearm. The list of manufacturers of firearms that may have fired Item 4 includes Hi-Point.
TKEXRR	EXAMINATIONS AND CONCLUSIONS Per the case agent, the bullets in Item 1 were test-fired in a Colt, model MK IV Series 80 Mustang, 380 Auto caliber handgun. Only the test-fires and not the handgun were submitted for examination. Item 4: A test-fired bullet from Item 1 was microscopically compared to the fired bullet in Item 4. Microscopic comparison of these bullets revealed significant differences in class of rifling marks. These bullets were discharged in different firearms. The class of rifling marks are consistent with certain firearms produced by Hi-Point.
TL4DR2	After the questioned bullets were taken to microscopic I found that bullet marked Item 4 was negative with bullets marked Item 2, Item 3 and Item 5. Bullets marked Item 2, 3 and 5 were positive with known bullets marked Item 1 grooves and land corresponds.
TMZRHZ	The bullets identified above as Item 2, Item 3, and Item 5 are all consistent with nominal caliber 38 bullets and all bear six land impressions and six groove impression with a left hand twist. The bullet identified above as Item 4 is consistent with a nominal caliber 38 bullet and bears nine land impressions and nine groove impressions with a left hand twist. Item 2, Item 3, Item 4, and Item 5 are all consistent by size and design with bullets commonly loaded in caliber 380 AUTO cartridges. Items 2 through 5 were microscopically compared to one another and to the test-fired bullets submitted as item 1 with the following results: Item 3 and Item 5 were identified as having been fired by the same firearm that generated the test-fired bullets submitted as Item 1 (reportedly a Colt, MK IV Series 80 Mustang, caliber 380 AUTO pistol). Item 2 could not be conclusively identified as having been fired by same firearm that generated the test-fired bullets submitted as Item 1 due to insufficient individual type detail agreement. Item 4 was excluded from having been fired by the same firearm that generated the test-fired bullets submitted as Item 1 based on gross differences in class characteristics.

TABLE 2

WebCode	Conclusions
	Manufacturers of firearms with general rifling characteristics similar to those exhibited by Item 4 include, but are not limited to: Hi-Point Firearms.
TP693P	The three (3) fired copper-jacketed FMJ bullets (Items 2, 3 and 5) were identified as having been fired in the Colt MK IV series 80 Mustang .380 Auto pistol used to provide the test fired bullets (Item 1). The fired copper-jacketed bullet (Item 4) was Not fired from the same firearm as the other three bullets. (Items 2, 3 and 5) in the Colt Mustang .380 Auto pistol (Item 1). The fired bullet (Item 4) was fired from a second, separate firearm possessing 9 lands & grooves with a left-hand twist (9L). The general rifling characteristics (GRC) on the fired bullet (Item 4) were searched through a GRC database and it was determined the bullet may have been fired from a Hi-Point Firearms CF .380 pistol. However, there may be other firearms that possess the same GRC's and are not contained in the databases.
TT4V4T	The reference projectiles fired from the Colt pistol, specimen #1, were compared to the copper jacketed projectiles, specimens #2 through #5. Microscopic examination revealed the following: Specimens #2, #3, and #5 were fired from the Colt pistol, specimen #1. Specimen #4 was not fired from the Colt pistol, specimen #1, due to differences in the class characteristics. Further examination revealed that specimen #4 was consistent with .38 caliber class ammunition (which includes .380 auto) and was fired from the barrel of a firearm that possessed nine lands and grooves with a left twist.
TT6JXP	Item #2: The bullet was compared to the test-fired exemplars, Item #1, obtained from the recovered Colt handgun. Sufficient corresponding individual barrel signatures were observed to conclude that the bullet was fired from the Colt handgun. Item #3: The bullet was compared to the test-fired exemplars, Item #1, obtained from the recovered Colt handgun. Sufficient corresponding individual barrel signatures were observed to conclude that the bullet was fired from the Colt handgun. Item #4: The bullet was compared to the test-fired exemplars, Item #1, obtained from the recovered Colt handgun. Differences in class characteristics were observed to conclude that the bullet was not fired from the Colt handgun. Item #5: The bullet was compared to the test-fired exemplars, Item #1, obtained from the recovered Colt handgun. Sufficient corresponding individual barrel signatures were observed to conclude that the bullet was fired from the Colt handgun.
TVCY3A	The item 2, item 3 and item 5 bullets are identified, with practical certainty, as having been fired from the same firearm that fired the item 1 bullets. The item 4 bullet is eliminated as having been fired by the same firearm that fired the item 1 bullets.
TVUUMW	The rifling number of item 2, 3 and 5 are same with that of item 1. And the rifling shape of the item 4 is different from other items.
TW7KXM	[No Conclusions Reported.]
TY9H9E	Test fired bullets in Item #1 were microscopically examined with the bullets in Items #2, #3, #4, and #5. Based on these comparative examinations it was determined that: A) The bullets in Items #2, #3, and #5 had all been fired in the same firearm as the test bullets in Item #1. B) Due to a difference in class characteristics the bullet in Item #4 had not been fired in the same firearm as the test fired bullets in Item #1. The 9-left rifling characteristics present on Item #4 are common to firearms manufactured by Hi-Point. Suspect firearms should be submitted for comparison.
TYDZ8D	Examinations showed that Item 2, Item 3, and Item 5 were discharged from the Colt MK IV Series 80 Mustang pistol. Examinations showed that Item 4 was not discharged from the Colt MK IV Series 80 Mustang pistol.
TZ2ME8	The Items 2, 3, 4 and 5 bullets were compared to the Items 1A-1C test fired bullets. During the

TABLE 2

WebCode	Conclusions
	<p>comparison of the Items 2, 3 and 5 bullets, agreement of class characteristics was observed. However, due to the lack of quality and quantity of individualizing marks, it is inconclusive as to whether they were fired from the same firearm as the Item 1 test fired bullets. The Item 4 bullet had different class characteristics and could not have been fired from the same firearm as the Item 1 test fired bullets.</p>
U7AYFE	<p>Item #01.01 - Three (3) expended bullets fired using the recovered firearm (Known). Item #01.02 One (1) expended bullet recovered from victim (Questioned). Item #01.03 - One (1) expended bullet recovered from wall at scene (Questioned). Item #01.04 - One (1) expended bullet recovered from wall a scene (Questioned). Item #01.05 - One (1) expended bullet recovered from snack display at the scene (Questioned). Items #01.01; #01.02; #01.03; &amp; #01.05 - The three (3) submitted questioned expended bullets were originally components of .380 caliber class cartridges that had been fired from a barrel with six lands and grooves of conventional style rifling of a left hand twist. Microscopic examination and comparison of the submitted questioned expended bullets with the submitted known expended bullets revealed the following: Items #01.02, #01.03, &amp; #01.05 revealed sufficient agreement of individual characteristics to conclude that they had been fired in the same weapon as the submitted test specimens, Item #01.01. Item #01.04 - The submitted questioned expended bullet was originally a component of a .380 caliber class cartridge that had been fired from a barrel with nine lands and grooves of conventional style rifling of a left hand twist. The questioned expended bullet had been fired from a second weapon.</p>
U7NNG7	<p>The Item 2, 3, and 5 bullets were fired from the same firearm that fired the Item 1 bullets (per agency, Item 1 represented to be tests fired from the suspect's firearm). The Item 4 bullet was not fired from the firearm that fired the Item 1 bullets.</p>
UBKCWD	<p>The submitted fired bullets, Items #2 - 5, were compared with the submitted test fired bullets, Item #1. Items #2,3 and 5 have agreement in all discernible class characteristics and sufficient agreement in corresponding individual characteristics for identification. These three (3) bullets were discharged from the same firearm that discharged the submitted tests, Item #1. The submitted bullet, Item #4, is eliminated from being fired by the firearm that discharged the submitted tests, Item #1, due to differences in class characteristics.</p>
UEJQHG	<p>The three fired bullets (reportedly fired from a .380 Auto caliber Colt model Mark 4 Series 80 Mustang semiautomatic pistol) were identified as having been fired from the same firearm as three of the four other fired bullets (1-02-AA, 1-03-AA, and 1-05-AA) due to consistent and repeatable marks. The three fired bullets were eliminated as having been fired from the same firearm as the one remaining fired bullet (1-04-AA) due to a difference in class characteristics. One of the fired bullets (1-04-AA) was most consistent with .380 Auto caliber and was fired from a firearm having nine conventionally rifled lands and grooves with a left twist. A list of possible firearms from which the bullet could have been fired would include, but should not be limited to: .380 Auto caliber firearms marketed by Hi-Point.</p>
UFDCFE	<p>Items #2, #3, #4, and #5 were examined and found to be consistent with .380 caliber. Items #2, #3, #4, and #5 were microscopically examined and determined to be suitable for comparison based on class and sufficient individual characteristics. Item #1 and Items #2, #3, and #5 were microscopically examined and compared. based on the observed agreement of their class characteristics and sufficient agreement of their individual characteristics, Items #2, #3, and #5 are identified as having been fired from the same firearm as Item #1. Item #1 and Item #4 were microscopically examined and compared based on the observed disagreement of class characteristics (number of lands and grooves), Item #4 is eliminated as having been fired from the same firearm as Item #1. Item #4 bullet is consistent with having been fired from firearms manufactured by Hi-Point. Laboratory reference files are not absolute;</p>



TABLE 2

WebCode	Conclusions
	there may be weapons manufactured that do not appear herein.
UHH2EG	The Items 01-01, 01-02, 01-03 and 01-05 bullets were fired from the same firearm. The Item 01-04 bullet was not fired from the same firearm as the Items 01-01, 01-02, 01-03, and 01-05 bullets. The Item 01-04 bullet is most consistent with bullets typically loaded into 380 Auto caliber cartridges and was fired from an unknown firearm with nine lands and grooves with a left hand twist. A possible manufacturer of the firearm that fired this bullet includes, but is not limited to, Hi-Point.
UHY3EX	Examination of the three (3) fired bullets, items #2, #3, and #5, revealed they are consistent with 380 Auto full metal jacketed bullets fired from a rifled barrel having six (6) lands and six (6) grooves, left-hand twist. The three (3) fired bullets, items #2, #3, and #5, were microscopically compared with test bullets previously fired from the Colt pistol, item #1. These comparisons revealed matching individual barrel engraved striations, confirming the three (3) fired bullets were fired from the Colt pistol. Examination of the fired bullet, item #4, revealed it is consistent with a 380 Auto full metal jacketed bullet fired from a rifled barrel having nine (9) lands and nine (9) grooves, left-hand twist. The fired bullet, item #4, was microscopically compared with test bullets previously fired from the Colt pistol, item #1. These comparisons revealed different class characteristics (number of lands / grooves) confirming the fired bullet is excluded as having been fired from the Colt pistol. Based on the class characteristics observed on the fired bullet, item #4, it is consistent with having been fired from a Hi-Point firearm. Other possibilities may exist.
UJDKKP	Ex. 2-1,3-1,5-1: The bullets were all fired from the same firearm that fired Exhibits 1-1A through 1-1C. The bullets were determined to be of 9mm caliber displaying rifling characteristics of six lands and grooves, left twist. Ex. 4-1: The bullet was not fired from the same firearm that fired Exhibits 1-1A - 1-1C, 2-1, 3-1 and 5-1. The bullet was determined to be of 9mm caliber displaying rifling characteristics of nine lands and grooves, left twist. Manufactures of firearms displaying similar rifling characteristics include, but are not limited to Hi-Point Firearms.
UK94LQ	Items 2, 3, and 5 were fired in the same .380 Auto firearm as Item 1 test fires. Item 4 was not fired in the same firearm as Items 1, 2, 3, and 5, based on a difference in class characteristics. Possible suspect weapons include .380 auto Hi-Point pistols; however, any suspect weapon should be submitted to the laboratory for analysis.
ULYEBX	Examination of the three (3) fired jacketed bullets, items 2, 3, and 5, revealed that they are consistent with 380 Auto full metal jacketed bullets fired from a conventional rifled barrel having six (6) lands and six (6) grooves, left-hand twist. The three (3) fired jacketed bullets, items 2, 3, and 5, were microscopically compared with test bullets previously fired from the Colt pistol, item 1. These comparisons revealed matching individual barrel engraved striation characteristics, confirming that the three (3) fired jacketed bullets, items 2, 3, and 5, were fired from the Colt pistol, item 1. Examination of the one (1) fired jacketed bullet, item 4, revealed that it is consistent with 380 Auto full metal jacketed bullets fired from a conventional rifled barrel having nine (9) lands and nine (9) grooves, left-hand twist. The one (1) fired jacketed bullet, item 4, was microscopically compared with test bullets previously fired from the Colt pistol, item 1. These comparisons revealed dissimilar class characteristics (number of lands and grooves, land and groove widths) indicating that the one (1) fired jacketed bullet, item 4, is excluded as having been fired from the Colt pistol, item 1. The rifling specifications observed on the one (1) fired jacketed bullet, item 4, correspond to the following brand of firearms: Hi-Point. Other possibilities may exist.
UMENCC	1. Items 2, 3, and 5 were discharged from the same firearm as Item 1. 2. Item 4 was not

TABLE 2

WebCode	Conclusions
	discharged from the same firearm as Item 1.
UW4AGA	Items 2, 3, and 5 could not be identified or eliminated as having been fired in the same firearm as Item 1. This conclusion was verified by Firearms Examiner [Name]. Item 4 was not fired in the same firearm as Item 1 or in the same firearm or firearms as Items 2, 3, and 5 (elimination). This conclusion was verified by Firearms Examiner . This conclusion was verified by Firearms Examiner [Name].
UWGV36	The three (3) bullets sent as recovered from the victim and the crime scene, Item 2: Bullet recovered from the victim, Item 3: First bullet recovered from the wall at the scene and Item 5: Bullet recovered from the snack display at the scene, were fired by the handgun brand Colt MK IV Series 80 Mustang Auto .380 (POSITIVE IDENTIFICATION). The bullet referred as Item 4: Second bullet recovered from the wall at the scene (disputed) was fired by a weapon different to the referenced handgun, based on the patron bullets recovered and referred as Item 1 (NEGATIVE IDENTIFICATION).
VBG69Q	Items 2, 3, and 5 were each fired from the same firearm which fired item 1. Item 4 was eliminated from being fired from the same firearm which fired item 1 based upon the difference in class characteristics.
VEF9DR	1. On 2016-06-15 during the performance of my official duties I received a sealed evidence bag with number PA4001418029 from Case Administration of the Ballistics Section containing the following exhibits: 1.1 Three (3) 9mm calibre fired bullets marked by me "210695/16 1" each. 1.2 Four (4) 9mm calibre fired bullets marked by me "210695/16" each and "2", "3", "4" and "5" respectively. 2. The intention and scope of this forensic examination comprise the following: 2.1 Examination and identification of fired bullets. 2.2 Microscopic individualization of fired bullets. 3. I examined the fired bullets mentioned in paragraphs 1.1 and 1.2 and compared the individual and class characteristics markings transferred to them by firearm components during the firing process using a comparison microscope and found: 3.1 The bullets mentioned in paragraph 1.2 marked "210695/16" each and "2", "3" and "5" respectively were fired from the firearm that discharged the bullets mentioned in paragraph 1.1. 3.2 The bullet mentioned in paragraph 1.2 marked "210695/16 4" was not fired from the firearm that discharged the bullets mentioned in paragraph 1.1.
VFCY8C	The test fired bullets in Item 1 were examined in conjunction with the bullets in Items 2, 3, 4 and 5 with the following results: A) The bullets in Items 2, 3 and 5 were fired in the same firearm as the bullets in Item 1. B) The bullet in Item 4 was not fired in the same firearm as Item 1 due to differences in class characteristics.
VJMXCQ	Examination of traces on the represented bullets has been conducted by microscope MOTIVI , later the traces were compared in the comparison microscope Leica FSC, this enabled us to conclude that the questioned Item 2, Item 3, Item 5 have been fired in the same firearm as the known bullets, but Item 4 has not been fired in the same firearm.
VRLEEH	Item 1 - Three (3) .380 Auto caliber fired bullets (samples from Colt pistol) (1). Item 2 - One (1) fired bullet (2). Item 3 - One (1) fired bullet (3). Item 4 - One (1) fired bullet (4). Item 5- One (1) fired bullet (5). The submitted specimens marked Items 2, 3, and 5 were examined and identified as three (3) fired .380 Auto caliber bullets exhibiting six (6) land and groove impressions with a left twist. The submitted specimen marked Item 4 was examined and identified as a fired .380 Auto/9mm Makarov caliber bullet exhibiting nine (9) land and groove impressions with a left twist. Items 2 through 5 were microscopically compared to Item 1 sample bullets. As a result of microscopic examination, it was concluded that Items 2, 3, and 5 were identified as having been fired in the same firearm that fired Item 1. Items 4 was eliminated as having been fired in the same firearm that fired Items 1, 2, 3, and 5 based on

TABLE 2

WebCode	Conclusions
	differences in class characteristics. Firearms that produce similar rifling characteristics as those exhibited on Item 4 include, but are not limited to: 9mm Luger caliber rifles manufactured by Hi-Point; 9mm Luger caliber pistols manufactured by Hi-Point; and .380 Auto/9mm Kurz caliber pistols manufactured by Hi-Point.
VWEJ4F	The class characteristics of 'unknown' bullet item 4, differ from the 'known' bullets item 1. Hence it is certain 'unknown' bullet item 4 was not fired from the same barrel as the 'known' item 1. The class characteristics of 'unknown' item 2, 3, and 5 are the same as 'known' item 1. Using the Bayesian approach in casework we view our findings under two hypotheses. For the 'unknown' bullets item 2, item 3 and item 5 and the three 'known' bullets item 1, the following hypotheses were regarded: - H1: The questioned bullet was fired by the submitted firearm. - H2: The questioned bullet was fired by another firearm of the same caliber and with the same class characteristics as the submitted firearm. The likelihood of the findings under the two hypotheses is estimated. The likelihood ratio is expressed on a 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) The findings of the investigation regarding the bullets item 2, item 3 and item 5 are much more probable when Hypothesis 1 is true, then when Hypothesis 2 is true.
W7JR2R	A. The bullet, described in item 1, item 2, item 3 and item 5, are .380 caliber, type metal case, with striations to the left(L-6)and were fired by the same firearm. B. The bullet, described in item 4, is .380 caliber, type metal case, with striations to the left(L-9)and was fired by a firearm.
WAJ4XR	Bullets designated as Item 2, Item 3, Item 5 were fired from a suspect's firearm. Bullet designated as Item 4 was fired from other firearm.
WDHDAF	Items 2, 3, and 5 were fired from the same firearm as test fires Item 1 (Colt MK IV Series 80 Mustang, 380 Auto handgun). Item 4 was fired from a second firearm. Item #4 is consistent with being a 38 caliber bullet typically loaded in ammunition designated 380 Auto. Item #4 was fired by a firearm conventionally rifled with 9 lands/grooves and a left hand twist. A list of makes of firearms that may have fired Item #4 includes, but is not limited to, Hi-Point Firearms. Item #4 is ineligible for entry into the NIBIN database.
WHCJHP	The items 2, 3 & 5 bullets were identified as having been fired in the same firearm as the known bullets item 1. Because of the difference in individual characteristics, the item 4 bullet could not have been fired in the same firearm as the known bullets item 1.
WHVD87	Examination under a comparison microscope LEICA FSC showed that the 3 bullets "item 1", "item 3" and "item 5" were fired from the COLT MK IV series 80 Mustang .380 seized from the suspect's residence. Examination under the same comparison microscope showed that the bullet "item4" was not fired from this handgun.
WPDJ9J	[No Conclusions Reported.]
WQLMTV	The bullets in Item 4 was not fired from the same firearm with bullets in Item 1, 2, 3 and 5. It cannot be determined if the bullets in Item 1, 2, 3 and 5 were or were not fired from the same firearm.
WTBA4X	The evidence in items 1 through 5 was analyzed by physical and microscopic examination. The three (3) bullets in items 2, 3, and 5 were determined to have been fired from the same weapon as the three (3) known bullets in item 1. The bullet in item 4 was determined not to have been fired from the same weapon as the three (3) known bullets in item 1. The bullet in item 4 was a 380 caliber bullet which had been fired from the barrel of a weapon rifled with nine (9) lands and grooves, left twist. Further analysis of the bullet in item 4 is pending

TABLE 2

WebCode	Conclusions
	submission of another weapon for additional comparison.
WTT33L	1. The bullets, Items 2, 3 and 5, were identified as having been fired from the same firearm as the bullets, Item 1. 2. The bullet, Item 4, was not fired from the same firearm as the bullets, Item 1.
WX44AC	The fired bullets (Items 2 and 5) are identified as having been fired from the same firearm as the submitted test shots. The submitted fired bullet (Item 4) is eliminated as having been fired from the same firearm as the submitted test shots. There are differences in class characteristics (Item 4 displays rifling characteristics of 9 lands and grooves with a left hand twist while the suspect firearm displays a 6 lands and grooves with a left hand twist). The submitted fired bullet (Item 3) is not identified nor eliminated (Inconclusive) as having been fired from the same firearm as the submitted test shots. The individual characteristics present do not display sufficient agreement. Item 3 is consistent with being a .38 caliber class (9mm and .357) fired metal jacketed bullet displaying conventional rifling specifications of 6 lands and grooves with a left twist. These specifications are characteristic of several firearm manufacturers. No suspected firearm should be overlooked. Item 4 is consistent with being a .38 caliber class (9mm and .357) fired metal jacketed bullet displaying conventional rifling specifications of 9 lands and grooves with a left twist. These specifications are characteristic of Hi-Point firearms, however, no suspected firearm should be overlooked.
WYYYYL	The recovered firearm has six (6) grooves with a right-hand spin; The firearm, which fired the bullet packaged in item 4, has nine (9) grooves with a left-hand spin. The bullets packaged in items 2, 3 and 5 have the same class characteristics as the three (3) bullets fired using the recovered firearm, packaged in item 1; The bullet packaged in item 4 has some different in class characteristic of the three bullets fired using the recovered firearm, packaged in item 1, so, this bullet was not fired by using the recovered firearm; The bullets packaged in items 2, 3 and 5, have an agreement in individual characteristics with bullets packaged in item 1, consistent with the agreement observed between the bullets packaged in item 1.
X2JYP9	Item 2, 3, and 5 were fired from the pistol, item 1. Item 4 was not fired from the pistol, Item 1, due to differences in class characteristics.
X6LWYF	The Items 1-5 jacketed 380 Auto caliber bullets were microscopically examined and compared. Items 2, 3 and 5 were identified as having been fired from the firearm represented by Item 1. Due to differences in general rifling class characteristics Item 4 was eliminated as having been fired from the firearm represented by Item 1. Firearms that produce general rifling class characteristics like those present on Item 4 include Hi-Point pistols, chambered to fire 380 Auto cartridges. This list is not all encompassing; it is possible another brand of firearm produced these class characteristics and is not listed due to the content of the database searched. The Item 4 bullet exhibits markings that may be suitable for identification with the firearm from which it was fired.
X9F37Q	The item 1 test fired bullets were microscopically compared to the item 2, item 3, and the item 5 bullets. It was determined that the item 2, item 3, and the item 5 bullets were fired in the same firearm as the item 1 bullets. The item 1 test fired bullets were microscopically compared to the item 4 bullet. The item 4 bullet was excluded as having been fired in the same firearm as the item 1 test fired bullets based on class characteristics.
XFLKUJ	PROJECTILES A (ITEM 2), B (ITEM 3), AND D (ITEM 5) WERE FIRED IN THE SAME WEAPON THAT PRODUCED THE SUBMITTED TEST FIRED PROJECTILES (ITEM 1). PROJECTILE C (ITEM 4) WAS NOT FIRED IN THE SAME WEAPON THAT PRODUCED THE SUBMITTED TEST FIRED PROJECTILES (ITEM 1), BASED ON DIFFERENCES IN CLASS CHARACTERISTICS. SUSPECT WEAPONS INCLUDE .380 AUTO HI-POINT PISTOLS; HOWEVER, ANY SUSPECT WEAPON

TABLE 2

WebCode	Conclusions
	SHOULD BE SUBMITTED FOR EXAMINATION.
XGG4WK	The projectiles in item's 2, 3, and 5 were compared to the test fired projectiles from the Colt pistol in item 1. It was determined that the Colt pistol DID fire the projectiles in item's 2, 3, and 5. The projectile in item 4 was eliminated from having been fired from the Colt pistol in item 1, based on differences in class characteristics. **This report contains the opinions and interpretations of the individual whose signature appears on the report. All identifications are based on microscopic comparisons and on the correspondence of individual characteristics.
XH8EKT	Based on agreement of discernible class characteristics and sufficient matching individual detail, the fired bullets, Items 1, 2, 3 and 5, were identified as having been fired from the same firearm. Based on significant disagreement of class characteristics, the fired bullet, Item 4, could not have been fired from the same firearm as the fired bullets, Items 1, 2, 3 and 5.
XL63XT	In the scene there were two different firearms with the same calibre. The recovered questioned bullets items 2,3 and 5 were fired in the same firearms as the Known bullets.
XND6VB	Items 1A, 1B, 1C, 2, 3, and 5 (bullets) were fired in the same firearm (Colt MK IV Series 80 Mustang .380 Auto handgun). Item 4 (bullet) was fired in a 2nd firearm.
XPNWZL	Item numbers 2 and 3 were fired from the recovered firearm based on sufficient class and individual characteristics when compared to testfire specimens from Item 1. Item #4 was not fired from the recovered firearm based on sufficient disagreement of class characteristics when compared to testfire specimens in Item 1. Item #5 is inconclusive when compared to recovered testfire specimens in Item 1 based on sufficient agreement of class characteristics, but an insufficient amount of individual characteristics to determine whether item #5 was fired by the same weapon.
XPU3NB	Examination of Items 2, 3 and 5 revealed them to be .38 caliber class bullets that have been fired from a firearm rifled with six lands and grooves with a left twist. Based on the agreement of class characteristics, Items 2, 3, and 5 were microscopically compared to the provided test exemplars, Item 1. These three bullets were identified on individual characteristics as having been fired by the recovered Colt 380 Auto caliber pistol. Examination of Item 4 revealed it to be a .38 caliber class bullet that has been fired from a firearm rifled with nine lands and grooves with a left twist. This caliber class includes bullets loaded in 380 Auto caliber ammunition and Item 4 is also consistent in design with Items 2,3 and 5. The Item 4 bullet is eliminated from having been fired by the recovered Colt pistol due to the difference in class characteristics. Firearms manufactured by Hi-Point have similar rifling characteristics as those represented on the Item 4 bullet. However, any suspect firearms recovered in 380 Auto caliber should be submitted along with Item 4 for comparison purposes.
XQ46EF	Exhibits 1, 2, 3, and 5 consist of six (6) .38-caliber class, copper jacketed bullets fired from a barrel rifled with six (6) lands and grooves with a left twist. The Exhibit 1, 2, 3, and 5 fired bullets were microscopically compared and were identified as having been fired from the same firearm. Exhibit 4 is a .38-caliber class, copper jacketed bullet fired from a barrel rifled with nine (9) lands and grooves with a left twist. Based on differences in class characteristics, Exhibit 4 was eliminated as having been fired from the same firearm as Exhibits 1, 2, 3, and 5.
XRBJJ2	Items 1, 2, and 5 were all fired from the same firearm based on matching class and individual characteristics including striae within the land impressions. Item 3 was unable to be identified or eliminated to Items 1, 2, and 5 based on matching class, but insufficient amount of individual characteristics in a pattern. Item 4 was not fired from the same firearm as Items 1, 2, and 5 based on differences in class characteristics including number of land and groove impressions. Item 4 is consistent with 380 Auto caliber bullets. A list of possible 380 Auto

TABLE 2

WebCode	Conclusions
	caliber firearms that could have fired Item 4 includes but is not limited to the following: Hi-Point.
XWQUW6	Question Items #2, #3 #5 were all fired from the same firearm as known Item #1. Question Item #4 was fired from a different firearm than known Item #1 due to differences in LAG characteristics.
XXLMLW	After microscopic comparison, it was determined that Item #s 2, 3, and 5 were fired from the submitted Colt Model MK IV series 80, .380 auto caliber semi-auto pistol, based on sufficient agreement of class and individual characteristics of land impression marks and groove impression marks. Item #4 was excluded from having been fired from the submitted colt pistol based on differences of rifling marks.
XYCQAW	I examined the fired bullets marked as item 1 to item 5 and compared the individual and class characteristics markings on them using a comparison microscope and found: The bullets marked items 2, 3 and 5 were fired from the same firearm as the known bullets (items 1). The bullet marked item 4 was fired from a different firearm as the known bullets (item 1).
Y3AG6F	Items 1, 2, 3, 4, and 5 were examined and analyzed using microscopy. The Item 2, 3, and 5 caliber 380 Auto bullets were identified as having been fired from the firearm represented by the Item 1 caliber 380 Auto bullets. The Item 4 caliber 380 Auto bullet was eliminated as having been fired from the same firearm as the Item 1, 2, 3, and 5 bullets due to differences in class characteristics. Firearms that produce general class characteristics like those present on Item 4 include Hi-Point firearms chambered to fire caliber 380 Auto cartridges. It is possible another brand of firearm produced these class characteristics and is not listed due to the content of the database searched.
Y3UDC9	The fired bullets in Items 2, 3, 4, and 5 were microscopically examined in conjunction with the test fired bullets in Item 1. Based on these comparative examinations, it was determined that: A. The fired bullets in Items 2, 3, and 5 had been fired in the same firearm as the test bullets in Item 1 (Pistol,Colt MK IV Series 80 Mustang, 380 Auto). B. Due to differences in class characteristics, the bullet in Item 4 had not been fired in the same firearm as the test bullets in Item 1. The rifling characteristics present on Item 4 are most consistent with 380 Auto caliber firearms manufactured by Hi-Point.
Y7Q6HK	The bullet in items 1 though 5 were examined and compared using the comparison microscope. Based on these comparisons it is the opinion of this examiner that the bullets in items 2, 3, and 5 were fired from the same firearm as these in item 1. Based on a difference in general rifling characteristics the bullet in item 4 was not fired in the same firearm as those in item 1.
YGC7ZF	Items 2, 3 and 5 were all microscopically identified as having been fired from the same firearm that fired the three bullets of Item 1. Item 4 was eliminated as having been fired in the same firearm as the aforementioned Items based on a difference in the number of lands and grooves.
YGT3TF	Exhibit 1(A through C) consists of three (3) .380 caliber, copper jacketed bullets, fired from a barrel rifled with six (6) grooves, left twist. Exhibit 1(A through C) was reportedly fired from a Colt, .380 Auto caliber semi-automatic pistol, model MK IV Series 80 Mustang. Exhibits 2, 3, and 5 consist of three (3) fired, .380 caliber, copper jacketed bullets which were fired from a barrel rifled with six (6) grooves, left twist, that contain microscopic marks of value for comparison. Exhibit 4 consists of one (1) .380 caliber, copper jacketed bullets which were fired from a barrel rifled with nine (9) grooves, left twist, that contains microscopic marks of value for comparison. Exhibits 2 through 5 were microscopically compared to Exhibit 1(A through C),

## TABLE 2

WebCode	Conclusions
	with the following results noted: It was determined that Exhibits 2, 3, and 5 were fired from the same firearm that fired Exhibit 1(A through C). Due to differences in class characteristics, Exhibit 4 was eliminated as having been fired from the same firearm that fired Exhibits 1(A through C), 2, 3 and 5. Firearms which produce similar rifling impressions like those on Exhibit 4 include, but are not limited to, semi-automatic pistols by Hi Point.
YH8N3G	[No Conclusions Reported.]
YNP7AW	A microscopic examination and comparison of the evidence described above revealed the following: Deformed bullets (2,3,5) and test fires (1,1,1) are identified as having been discharged from the SAME firearm based on the observed agreement of their class characteristics and sufficient agreement of their individual characteristics. Deformed bullet (4) is ELIMINATED as having been discharged from the same firearm as deformed bullets (2,3,5)and test fires (1,1,1) based on the observed disagreement of class characteristics.
YQLBD7	Items 2, 3, and 5 were fired in the same firearm as Item 1. This conclusion was verified by Firearms Examiner [Name]. Item 4 was not fired in the same firearm as Item 1. This conclusion was verified by Firearms Examiner [Name]. Item 4 is consistent with the 38 caliber family, which includes 380 Auto. In the event that Item 4 was fired in a 380 Auto firearm, then it could have been fired in a firearm of the following manufacture: Hi-Point Firearms
YRRZC9	The bullets Item 1 were visually inspected. The bullets Items 2, 3, and 5 were identified as having been fired from the same firearm as the bullets Item 1. The bullet Item 4 was not fired from the same firearm as the bullets Items 1, 2, 3, and 5. The bullet is 38 caliber class (380/9mm) and displays rifling characteristics similar to 380 Auto caliber pistols by Hi-Point Firearms.
YT6R7B	1) The three bullets from the recovered pistol (Exhibit 1) were fired in the same firearm as the Exhibit 2, 3, & 5 bullets. 2) The Exhibit 4 fired bullet was excluded from the pistol which fired the three fired bullets in Exhibit 1. 3) The Exhibit 4 38/9mm caliber bullet was most likely fired in a Hi-Point pistol. This list is not all-inclusive and does not exclude other firearms having similar general rifling characteristics.
YTMJDA	The three fired metal jacketed bullets (Items #2, #3, and #5) are identified with test shots obtained from the Colt pistol (Item #1). The fired metal jacketed bullet (Item #4) is eliminated with test shots obtained from the Colt pistol (Item #1) due to differences in class rifling characteristics (9 Left vs. 6 Left). Item #4 is consistent with being a .380/9mm caliber fired metal jacketed bullet displaying conventional rifling specifications of nine lands and grooves with a left twist. These rifling specifications are characteristic of firearms manufactured by Hi-Point; however, no suspected firearm should be overlooked.
YUY62Q	In my opinion, a microscopic comparison of firing marks has shown that there is sufficient agreement of class and individual characteristic markings to conclusively determine that items 2, 3 and 5 were fired from the recovered gun (item 1 test fires). In my opinion, there is sufficient disagreement of class (and individual characteristic markings) to conclusively determine that item 4 was fired from a different gun (not item 1).
YVU2C6	The four fired bullets, Items 2, 3, 4 and 5, share physical and class characteristics with the 38 caliber class, including but not limited to, 380 AUTO. Three fired bullets, Items 2, 3 and 5, and the test fired bullets from Item 1 exhibit general rifling characteristics of six land and groove impressions with a left twist and some individual characteristics that may be of value for a comparative analysis. The fired bullet, Item 4, exhibits general rifling characteristics of nine land and groove impressions with a left twist. It exhibits some individual characteristics that may be of value for a comparative analysis. Item 4 was microscopically examined and compared

TABLE 2

WebCode	Conclusions
	with Items 1, 2, 3 and 5. Based on the observed disagreement of class characteristics, Item 4 is eliminated as having been fired from the same firearm as Items 1, 2, 3 and 5. Items 2, 3 and 5 were microscopically examined and compared with the test fired bullets, Item 1. Based on the observed agreement of their class characteristics and sufficient agreement of their individual characteristics, Items 2, 3 and 5 are identified as having been fired from the same firearm as the test fired bullets, Item 1.
Z3MHH2	Item 2, item 3 and item 5 bear marks consistent with having been fired from K-1 (item i). Item 4 was not fired from K-1 (item 1). The rifling characteristics found on item 4 are commonly associated with firearms marketed under the name of Hi-Point.
Z6VLCD	The three bullets submitted as item 1 were fired from the same firearm. Items 2, 3 and 5 were fired from the same firearm as the bullets submitted for item 1. Item 4 was not fired from the same firearm as items 1, 2, 3 or 5. Item 4 is most consistent with a .380 Auto caliber bullet and was fired from a firearm with conventional rifling consisting of nine lands and grooves with left twist. A list of possible firearms that item 4 may have been fired from would include, but not be limited to: .380 Auto caliber pistols manufactured by Hi-Point.
Z8FJHU	3.1 Four 9mm calibre fired bullets and marked them 246612/16 (2), (3), (4) and (5) respectively. 3.2 Three 9mm calibre test fired bullets and marked them 612T1a, 612T1b and 612T1c respectively. 4. The intention and scope of this forensic examination comprise of the following: 4.1 The examination and identification of fired bullets. 4.2 Microscopic individualization of fired bullets. 5. I examined the fired bullets mentioned in 3.1 and 3.2 and compared the individual and class characteristics markings on them using a comparison microscope and found: 5.1 The bullets mentioned in 3.1 marked 246612/16 (2), (3), (5) and the bullets mentioned in 3.2 were fired in the same firearm. 5.2 the bullet mentioned in 3.1 marked 246612/16 (4) was not fired from the same firearm as the bullets mentioned in 5.1.
Z9WMGF	[No Conclusions Reported.]
ZEHNDK	Examined the specimen marked #4. It weighs 95.2 grains and indicates nine lands and nine grooves with a left hand twist. It is a .38 caliber class discharged full metal jacketed bullet. Examined the three specimens marked #2, #3, and #5. They weigh 95.5, 94.9, and 95.5 grains respectively and each indicates six lands and six grooves with a left hand twist. They are .38 caliber class discharged full metal jacketed bullets. The bullets marked #2, #3, and #5 were microscopically compared against submitted test standards and were identified as having been discharged in the 380 Auto caliber Colt semiautomatic pistol. The bullet marked #4 was microscopically compared against submitted test standards and was eliminated as having been discharged in the 380 Auto caliber Colt semiautomatic pistol due to the difference in general rifling characteristics.
ZFD8FL	3. On 2016-06-14 during the performance of my official duties I received a sealed evidence bag with number PA4001418030 from Case Administration of the Ballistics Section, containing the following exhibits: 3.1 Three (3) 9mm calibre (.380) fired bullets marked "210705/16" each and "1A", "1B" and "1C" respectively. 3.2 Four (4) 9mm calibre (.380) fired bullets marked "210705/16" each and "2", "3", "4" and "5" respectively. 4. The intention and scope of this forensic examination comprises of the following: 4.1 The examination and identification of bullets. 4.2 Microscopic individualization of fired bullets. 5. I examined the fired bullets mentioned in paragraphs 3.1 and 3.2 and compared the individual and class characteristics markings on them using a comparison microscope and found: 5.1 The bullets mentioned in paragraph 3.2 marked "210705/16" each and "2", "3", and "5" respectively were fired in the same firearm that discharged the bullets mentioned in paragraph 3.1. 5.2 The bullet mentioned in paragraph 3.2 marked "210705/16 4" was not fired in the same firearm that



TABLE 2

WebCode	Conclusions
	discharged the bullets mentioned in paragraph 5.1.
ZFW94A	Items 2, 3, and 5 (fired bullets from the victim and the scene) were identified as having been fired from the suspect's Colt Mark IV Series Mustang .380 Auto caliber pistol. Item 4 (fired bullet from the scene) was eliminated as having been fired from the suspect's Colt Mark IV Series Mustang .380 Auto caliber pistol.
ZG7BUE	[No Conclusions Reported.]
ZJWKZA	Items 2, 3, and 5 were identified as having been fired in the recovered firearm, a Colt MK IV Series 80 Mustang .380 Auto caliber handgun. Item 4 was eliminated as having been fired in the recovered firearm, the Colt .380 Auto caliber handgun.
ZKAUDG	Item #1.1 (Colt pistol) and Items #1.2, #1.3, #1.4, and #1.5 (four ~.380 caliber FMJ-FP fired projectiles) were examined and microscopically compared on 07/06/2016. Based on agreement of all discernable class characteristics and sufficient agreement of individual characteristics, Items #1.2, #1.3, and #1.5 (three ~.380 fired projectiles) were positively identified as having been fired from Item #1.1 (Colt pistol). Based on disagreement of class characteristics, Item #1.4 was eliminated as having been fired from Item #1.1 (Colt pistol). The General Rifling Characteristics of Item #1.4 are consistent with firearms manufactured by Hi-Point Firearms.
ZRA7DJ	The bullets Items 2, 3, and 5 were all fired from the same firearm as the bullet Item 1B (test). Items 2, 3, and 5 were determined to be of 380 Auto caliber displaying rifling characteristics of six lands and grooves, left twist. Item 1C (test) was not examined further. The bullet Item 4 was not fired from the same firearm as the bullet Item 1A (test). Item 4 was determined to be of 380 / 9mm caliber displaying rifling characteristics of nine lands and grooves, left twist. Manufacturers of firearms with similar rifling characteristics include, but are not limited to Hi-Point Firearms.
ZTE3CT	[No Conclusions Reported.]
ZUE2TF	The Item 2, Item 3, Item 4, and Item 5 fired .380 caliber bullets were compared to the Item 1 test bullets. Item 2, Item 3, and Item 5 were identified as having been fired from the same firearm as the Item 1 test bullets. The Item 4 bullet was fired from a different .380 caliber firearm rifled with nine lands & grooves, Left twist. Firearms chambered for this caliber with these general rifling characteristics include pistols manufactured by Hi-Point.

# Additional Comments

## TABLE 3

WebCode	Additional Comments
28FY8Z	There was no significant agreement or disagreement of the individual characteristics between the test fired bullets and the "evidence" bullets (items 2, 3 & 5).
2CCE6N	"Item 4 had the characteristics of having been fired from a firearms barrel that contained 9 lands and grooves. Item 4 also had the characteristics of having been fired at least twice. The characteristics were that there were two visible and independent sets of 9 land and groove impressions".
2HEQ2K	Elimination based on differences in class characteristics.
3HXU9L	Based on the rifling class characteristics, item 4 could have been fired by the following listed firearms normally encountered by the laboratory. This is not a complete list. 1) Hi Point Model Pistol
4JKRX4	The bullet from Item 4 bears general rifling characteristics of nine grooves, left twist known to be used in 380 AUTO caliber semiautomatic pistols manufactured and/or marketed by Hi-Point. However, since this list is not necessarily complete, any firearm that becomes suspect in this case should be submitted to this laboratory for examination.
6VPCTF	These conclusion are based in the bullet examination, microscopic examination and microscopic comparison examination.
72AYWK	The fired bullet specimens in Exhibit #2 and #3 were microscopically inter-compared; however, no identifications were made. This indicates that they may have been fired in different firearms.
7MUWGG	(1)Practical Certainty: Since it is not possible to collect and examine samples of all firearms, it is not possible to make an identification with absolute certainty. However all scientific research and testing to date and the continuous inability to disprove the principles of toolmark analysis have demonstrated that firearms produce unique, identifiable characteristics which allow examiners to reliably make identifications.
7YKQQP	Item 4 was discarded because of differences in class features.
8A6883	Items 1,2,3, and 5 had six lands and grooves with a left-hand twist. Item 4 had nine lands and grooves with a left-hand twist.
8QC926	My report would be a little different if I had test fired the firearm myself.
9FLC7G	Very poor markings on test fired bullets and evidence bullets, Items 2, 3, and 5. Multiple test fires needed to make an identification to evidence bullets.
9RYC3B	Fired bullet marked (4) was very suspiciously close to one of the tests, however due to the number of grooves present it was eliminated.
A939YE	In the attachment the following makes and models are listed: Hi-Point Model CF Hi-Point Model CF380
AJ27KT	The submitted exhibit(s) will be transferred to [Name].
AJ3VQB	Microscopic comparison was not made between the bullets described in the item #1, item #2, item #3 and item #5, with the bullet described in the item #4, due to incompatibility of class characteristics (rifling quantity 6-6 and 9-9).
ARWWDG	Items F1A1, F1B, F1C, F1D and F1E are 38 caliber class bullets based upon diameter. O/I: items F1A1, F1B, F1C, F1D and F1E are consistent with bullets loaded in .380 Auto caliber

TABLE 3

WebCode	Additional Comments
	cartridges based on weight and style. Item F1D, the bullet, exhibits characteristics found in (but not limited to) the following fireArms: Hi-Point .380 Auto caliber fireArm.
B6G3FA	1. This determination is based on the following methodologies: bullets, microscopic and comparison microscopic.
BA6MJP	An example of a .380" ACP calibre handgun with 9L rifling, is the "Hi-Point Firearms, Model CF" semi-automatic handgun.
BWK9FQ	SHOULD AN ADDITIONAL SUSPECTED FIREARM BE RECOVERED, SUBMIT, AND REFER TO THE ABOVE REFERENCE NUMBER.
D2VWED	The firearm that fired the bullet in Item 4 has different rifling characteristics and was therefore a different firearm.
D76AWC	Items #1, #2, #3, and #5 were tough IDs. The identifications were made using cumulative striated detail present. The tests and bullets were scribed with an "x" in an area of best comparison. Item #4 was eliminated due to different rifling characteristics.
DEVJGF	Since there was identifiable toolmark agreement in several groove impressions of all test -fired bullets and questioned bullets #2, 3, and 5, it would have been useful for CTS to have included a brown Forensic-Sil cast of the bore of the Colt pistol so examiners could evaluate the grooves for subclass toolmark influence. Without being able to evaluate for subclass influence, the groove impression striae could not/cannot be used for identification purposes.
ECA7HX	Based on the GRCs present, firearms that could have fired Exhibit 4 would include, but not be restricted to, those manufactured by Hi-Point Firearms.
ECPEJK	It was not found any correspondence of features between the three bullets fired of Item 1 and the Item 4.
FQ4289	Microscopic comparison was not made between the pieces of evidence described in the Item 1, Item 2, Item 3 and Item 5 and the piece of evidence described in the Item 4, due to class characteristics incompatibility concerning the total amount of the stria.
G23ACX	Item 1 standards could not be identified to each other using the marks observed in the rifling. Additional toolmarks were observed on the ogive that could be identified to each each (x3), but where not in the same orientation as the rifling. These marks were deemed to be secondary to the marks placed onto the projectiles during discharge, and could not be used to determine discharge origin. The toolmarks observed on Item 1 could be identified to items 3, 4 and 5, but could not be used in identifying discharge origin. Item 2 did not exhibit these toolmarks.
GQFBLR	Firearms manufactured with rifling characteristics similar to the ones present on Item 4 include, but may not necessarily be limited to, Hi-Point .380 Auto pistols.
H4J2WY	When microscopically compared, Item 1 (test fires), lacked sufficient individual characteristics that are required to conclude that they were fired from the same "known" firearm. If this situation was to occur in casework and the firearm was accessible, I would create additional test fires with the same or similar ammunition from lab stock in hopes of creating test fires that displayed sufficient individual characteristics suitable for comparison/identification purposed. However, this was not the case, and the test fires, Item 1, were deemed unsuitable for comparison to Items of similar class characteristics.
H6DK37	The spent projectile list in Item 4 was not fired from the .380 Auto caliber Colt MK IV series 80 Mustang semi-automatic pistol that produced the test fires listed in Item 1.
HUTK23	1. The bullet described in item 4, was not fired by the recovered firearm. The conclusions are

TABLE 3

WebCode	Additional Comments
	based on the following examinations: bullet, microscopic and microscopic comparison.
J77VFK	Firearms with a similar rifling pattern include, but are not limited to, the following: Hi-Point brand of 380 Auto semi-automatic pistols. This is not meant to be an all-inclusive list but rather an investigative aide; any suspect firearm(s) of the appropriate caliber-class should be submitted for comparison.
J78PW6	Overall, the reproducibility of marks between the three test bullets (Item 1) was only fair at best. Some variability was noted between the test bullets. The identifications of the bullets (Item 3 and 5) to Item 1 were not "textbook", but sufficiently clear. However it was thought that the quality and quantity of striated marks present on the bullet (Item 2) was not ideal and taken on its own merits (without context to the other questioned bullets in this test), that an identification could not be reported. (Having stated that, it is considered that there is a high likelihood Item 2 was discharged through the same barrel as the bullets as Item 1. But for the reasons stated, it cannot be reported as such.)
JPHJQ	Insufficient detail on Item 1 bullets to establish reproducibility.
JKMZCF	The instruments used for analysis were: Camera, Brand: Canon, Model: EOS 5D MARK III, Serial: 62024005518, Pie de Rey, Serial: 80614541, Balance, Brand: METTLER TOLEDO PL-202-S, Model: PL-202-S, Serial: 1122482795, Ballistic comparison microscope, Brand: LEICA FSC Serial: 11020463009, Marker, Model: NG 2/S.
JLW6P4	FBI GRC 2016 Rifling Data Search results = Hi-Point Model CF/CF380
JWG4Q8	ID made with pattern matching (sufficient agreement) supported by CMS criteria.
JX8EFE	Item 4 has design features consistent with bullets loaded in 380 Auto caliber cartridges and displays rifling characteristics similar to firearms by HiPoint.
JXT4M2	The comparison between Item 1 and Items 3 and 5 had insufficient individual marks for identification.
JXVTUK	The Item 1 test fires did not have sufficient enough individual markings present. I was unable to identify the test fires to each other. In casework I would have had the firearm and re-test fired it. Item 2-3 and 5 also did not have enough individual markings present and were marked as inconclusive to each other.
KKG67E	Based on the above said, it can be concluded that two firearms can be investigated: One is the seized from the suspect .380 Automatic Colt MK IV Series 80 Mustang handgun and the other one is a .380 Auto handgun too, that can be found in several brands and has not been located yet.
KLAX2X	Item 5 conclusion: Inconclusive. Projectile 5 does have the same class characteristics as the known projectiles in box 1 (caliber, land width, groove width, number of land/grooves, direction of twist). There are some corresponding striation markings between them, but the quantity and quality of these markings are insufficient to conclude they were fired from the same firearm. However, because the class characteristics were the same, item 5 can not be excluded.
KYXZLB	In the shooting occurred inside a convenience store, were used as minimum two different firearms.
LAGRUL	Items 2, 3 and 5 (fired bullets) are consistent with being .38/9mm caliber class fired metal-jacketed bullets displaying conventional rifling specifications of 6 lands and grooves with a left twist. These specifications are characteristic of several firearm manufacturers. No suspected firearm should be overlooked. Item 4 (fired bullet) is consistent with being a

TABLE 3

WebCode	Additional Comments
	.38/9mm caliber class fired metal-jacketed bullet displaying conventional rifling specifications of 9 lands and grooves with a left twist. These specifications are characteristic of Hi-Point firearms. However, no suspected firearm should be overlooked.
LNYDHK	Bullets were very poorly marked.
LPMXZA	The questioned bullet, identified as Item 4, was constituent part of a .380 auto caliber cartridge that was fired by a different weapon to the suspicious handgun.
LT82T2	The firearm did not mark the bullets very well. The lack of reproducibility on the test-fires precluded an identification or an elimination based on individual characteristics.
LW7CP2	The GRC databases search for firearms matching the characteristics of Item 4 resulted in Hi-Point Firearms. Additional firearms may also exist having similar characteristics. These firearms may also be considered a potential source of the fired components.
MACR8Q	The projectile in Item 4 bears class characteristics consistent with .380 caliber, nine lands and grooves, left twist. The test fires in Item 1 and the projectiles in Items 2, 3 and 5 bear class characteristics consistent with .380 caliber, six lands and grooves, left twist.
NPLV8B	Striations parallel to the axis of the bullet were observed on the ogive of the five bullets in the exhibits marked "Item 1", "Item 2" and "Item 4". There was a correspondence between the striations on two of the bullets in the exhibit marked "Item 1" and the two bullets in the exhibits marked "Item 2" and "Item 4".
P2RBRL	BULLET THAT INSCRIBED ITEM#4 HAVE DIFERENT CLASS CHARACTERISTICS THAN PISTOL COLT MK IV SERIES 80 MUSTANG .380 AUTO.
PWVVUX	Item 4 Rifling Impressions (9L) were measured and are consistent with being fired from a Hi Point Semi-Automatic Pistol.
QEAH4D	All recovered questioned bullets (Item #2, #3, #4 and #5) were 9 mm caliber full metal jacketed and weighted approximately 95 grains, which is consistent with the .380 Auto caliber.
RJ6LKX	The test fired known specimens were marked for my examination purposes as being items 1A, 1B, and 1C. Items 1A, 1B, 1C were compared to each other to ensure that they could be identified to each other based upon the standard of having sufficient agreement of individual characteristics.
RJNDLV	Results and Conclusions: Items 1A, 1B, 1C, 2, 3, 4 and 5 are 38 caliber class bullets based upon the diameter. Opinion/Interpretation: Items 1A, 1B, 1C, 2, 3, 4 and 5 are consistent with bullets loaded in .380 Auto caliber cartridges based upon the weight/style. Item 4, the bullet, exhibits characteristics found in (but not limited to) the following firearms: Hi-Point .380 Auto caliber firearms.
RLA7C4	The bullet from Item 4 was not fired through the same barrel of Item 1.
T4MCWY	the bullets submitted in items 2,3,and 5 has 6 impression groove marks. the bullet submitted in item 4 has 9 impression groove marks.
TKEXRR	Items 2, 3, and 5 The test-fired bullets from Item 1 were microscopically compared to the fired bullets in Item 2, Item 3 and Item 5. Item 2 was also microscopically compared to the fired bullets in Item 3 and Item 5. Microscopic comparison of these bullets revealed that they have similar class of rifling, but do not have sufficient agreement or significant disagreement of individual marks. These bullets could not be identified or eliminated as having been discharged in the same firearm. The findings are inconclusive.

TABLE 3

WebCode	Additional Comments
TL4DR2	Questioned bullet marked Item 4 is negative with known bullets marked Item 1 different class and individual marks.
TMZRHZ	Item 2 Inconclusive: While agreement was observed it was considered insufficient agree for ID.
U7NNG7	The design features of Item 4 are consistent with bullets loaded in 380 Auto caliber cartridges. This bullet displays rifling characteristics similar to pistols by Hi-Point, among possible others.
UW4AGA	Items 2, 3, 5, and 1 do not exhibit sufficient individual characteristics to determine if they were fired in the same firearm. There is an area on the bullets that exhibits what appears to be markings produced during translational motion through the bore of the firearm. However, without the firearm, it is not possible to rule out subclass influence in this area. Therefore, my conclusion is inconclusive.
UWGV36	Based on the evidence, it can be said that, in fact, at least two different firearms were used.
WQLMTV	The grooves of the bullet marked 246622/16 4A is different from those marked 246622/16 2A, 3A, 5A, and 622TB1A 622TB1B and 622TB1C
XND6VB	Item 4 is consistent with a 380 Auto fired bullet fired by a firearm conventionally rifled 9 left. A list of makes of firearms that may have fired item 4 includes, but is not limited to: Hi-Point Firearms.
XQ46EF	Some difficulty identifying test fire to test fire (Exhibit 1).
Z3MHH2	The test fired bullets submitted were poorly marked. They could be barely associated with each other.

# Appendix

## Collaborative Testing Services - Forensic Testing Program **Test No. 16-526: Firearms Examination**

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DATA MUST BE RECEIVED BY July 25, 2016 TO BE INCLUDED IN THE REPORT

Participant Code:

WebCode:

### **Accreditation Release Statement**

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

This participant's data is intended for submission to ASCLD/LAB, ANAB, and/or A2LA. (Accreditation Release section on the last page must be completed and submitted.)

This participant's data is **NOT** intended for submission to ASCLD/LAB, ANAB, and/or A2LA.

Scenario:

Police are investigating a shooting that occurred inside a convenience store. The victim was shot once and the bullet was recovered by the medical examiner. Investigators also recovered three bullets from the scene, two from the wall and one from a snack display. A suspect was apprehended later that day and a handgun was seized from his residence. The firearm is a Colt MK IV Series 80 Mustang .380 Auto handgun. Three rounds of Winchester Train & Defend .380 Auto 95 grain FMJ ammunition (which were consistent with the bullets recovered from the victim and scene) were test fired from the recovered firearm and the bullets collected. Investigators are asking you to compare the recovered bullets from the victim and scene with those test fired in the recovered firearm and report your findings.

*Please note the following:*

- Each Item is in a labeled jewel box, it is suggested that when the items are removed from their labeled boxes, they be marked according to your laboratory procedure. However, in case the items are separated from their boxes before labeling has occurred, each item has been inscribed with its item number.
- The bullet stated to have been recovered from the victim was never exposed to biological material.

Items Submitted (Sample Pack F1):

- Item 1: Three bullets fired using the recovered firearm (known).
- Item 2: Bullet recovered from victim (questioned).
- Item 3: First bullet recovered from the wall at the scene (questioned).
- Item 4: Second bullet recovered from the wall at the scene (questioned).
- Item 5: Bullet recovered from the snack display at the scene (questioned).

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

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

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

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

Page 1 of 3

Participant Code:

WebCode:

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

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3.) Additional Comments

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<p><b>Return Instructions:</b> Data must be received via online data entry, fax (please include a cover sheet), or mail by <i>July 25, 2016</i> to be included in the report. Emailed data sheets are not accepted.</p>	<p>Participant Code:</p>
<p>QUESTIONS?          TEL: +1-571-434-1925 (8 am - 4:30 pm EST)          EMAIL: <a href="mailto:forensics@cts-interlab.com">forensics@cts-interlab.com</a>  <a href="http://www.ctsforensics.com">www.ctsforensics.com</a></p>	<p>ONLINE DATA ENTRY: <a href="http://www.cts-portal.com">www.cts-portal.com</a>          FAX: +1-571-434-1937          MAIL: Collaborative Testing Services, Inc.          P.O. Box 650820          Sterling, VA 20165-0820 USA</p>

Please return all pages of this data sheet.



## RELEASE OF DATA TO ACCREDITATION BODIES

The following Accreditation Releases will apply only to:

Participant Code:

WebCode:

for Test No. **16-526: Firearms Examination**

This release page must be completed and received by **July 25, 2016** to have this participant's submitted data included in the reports forwarded to the respective Accreditation Bodies.

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**

**ASCLD/LAB** Certificate No. \_\_\_\_\_

**ANAB** Certificate No. \_\_\_\_\_

**A2LA** Certificate No. \_\_\_\_\_

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

Signature and Title \_\_\_\_\_

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

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

### Accreditation Release

#### **Return Instructions**

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

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

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

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