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FORENSIC TESTING PROGRAM

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Toolmarks Examination
Test No. 22-5282 Summary Report

Each sample set contained one known screwdriver (Item 1) and two paint can lids containing questioned toolmarks (Items 2 and 3). Participants were requested to examine these items and report their findings. Data were returned from 129 participants and are compiled into the following tables:

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

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

Manufacturer's Information

Each sample set contained one Stanley ¼ inch slotted screwdriver (Item 1) and two 307 metal paint can lids with epoxy liner containing questioned toolmarks (Items 2 and 3). Participants were requested to determine if any of the questioned toolmarks were made by the submitted tool. The questioned toolmarks on the Item 2 and Item 3 paint can lids were produced by the Item 1 screwdriver.

ITEMS 1, 2, & 3 (IDENTIFICTION MARKS): The Item 1 screwdriver was held vertically to the Item 2 paint can lid (with blue paint). The Item 2 paint can lid, laying on a flat surface, was struck parallel to the blue painted line with a rubber mallet and packaged into a pre-labeled Item 2 envelope. The Item 1 screwdriver was held vertically to the Item 3 paint can lid (with red paint). The Item 3 paint can lid, laying on a flat surface, was struck parallel to the red painted line with a rubber mallet and packaged into a pre-labeled Item 3 envelope. The corresponding Item 1 screwdriver was labeled with an Item 1 label and packaged in bubble wrap. All three items were immediately assembled into the sample pack box as described below. This process was repeated until all identification toolmarks had been prepared.

SAMPLE PACK ASSEMBLY: The corresponding Item 1 screwdriver and the Item 2 and Item 3 paint can lids were packaged into a pre-labeled sample pack box. Two additional paint can lids were included for testing purposes. This process was repeated until the required number of sample packs were produced.

VERIFICATION: Two of the three predistribution laboratories confirmed that the Item 1 screwdriver produced the toolmarks on the Item 2 and 3 paint can lids. The last predistribution laboratory identified the Item 2 and 3 paint can lids as having toolmarks made by the same unknown tool but did not identify those toolmarks to the Item 1 screwdriver. In addition to the sample sets examined by predistribution laboratories, ten randomly selected sample sets were examined by a qualified toolmark examiner who confirmed the expected identification results.

Summary Comments

This test was designed to allow participants to assess their proficiency at a toolmark examination involving impression type toolmarks. Each sample set contained one Stanley ¼ inch screwdriver (Item 1) and two 307 metal paint can lids with epoxy liner containing questioned toolmarks (Items 2 and 3). Participants were requested to determine if any of the questioned toolmarks were made by the submitted tool (Refer to Manufacturer's Information for preparation details).

Of the 129 responding participants, 126 (98%) identified the toolmarks on Items 2 and 3 as having been created by the Item 1 screwdriver. Of the remaining three participants, two eliminated Items 2 and 3 as having been created by the Item 1 screwdriver and one participant identified Item 2, but eliminated Item 3 as having been created by the Item 1 screwdriver.

Examination Results

Were the suspect toolmarks on either of the paint can lids (Items 2 and 3) produced by the questioned screwdriver (Item 1)?

TABLE 1

WebCode	Item 2	Item 3	WebCode	Item 2	Item 3
2B2QRC	Yes	Yes	7N2QUR	Yes	Yes
2EP3T3	Yes	Yes	7NEFVJ	Yes	Yes
2FXCKZ	Yes	Yes	83UX8J	Yes	Yes
2L6NVF	Yes	Yes	8DDC7F	Yes	Yes
2L8DZC	Yes	Yes	8DDCBL	Yes	Yes
2M22H8	Yes	Yes	8JMVTM	Yes	Yes
2R3NGQ	Yes	Yes	8LR6HB	Yes	Yes
32TDA9	Yes	Yes	8YBNCZ	Yes	Yes
32W4E7	Yes	Yes	8YTW4F	Yes	Yes
3DNMVW	Yes	Yes	8ZRW8L	Yes	Yes
3NAQ3W	Yes	Yes	9C7KFL	Yes	Yes
3UL3KQ	Yes	Yes	9GE74J	Yes	Yes
3ZLWFJ	Yes	Yes	9JTJY4	Yes	Yes
4EGZXF	Yes	Yes	9N8UGE	Yes	Yes
4NLTMA	Yes	Yes	9Q7LTM	Yes	Yes
62JAJQ	Yes	Yes	9T4LK6	Yes	Yes
63FW7Q	Yes	Yes	9W6KZ4	Yes	Yes
667ZWC	Yes	Yes	A9DPNB	Yes	Yes
6LGJV4	Yes	Yes	AD4C3G	Yes	Yes
6URNZH	Yes	Yes			

TABLE 1

WebCode	Item 2	Item 3
AR7NRN	Yes	Yes
AUD32F	Yes	Yes
BEYYDZ	Yes	Yes
BGJ94C	Yes	Yes
BMT672	Yes	Yes
CFPKLG	Yes	Yes
CQKWUN	Yes	Yes
DARM44	Yes	Yes
DEQWHC	Yes	No
DMGHLP	Yes	Yes
DRDBDY	Yes	Yes
DTQHZ2	Yes	Yes
E3QLQG	Yes	Yes
E6VDC3	Yes	Yes
EDMWTV	Yes	Yes
EZ4ALJ	Yes	Yes
F3MGPC	Yes	Yes
F3NFK7	Yes	Yes
FPJXA7	Yes	Yes
FPJYV6	Yes	Yes
G746KA	Yes	Yes
H6MD6X	Yes	Yes
HKGTD4	Yes	Yes
HZTJ3P	Yes	Yes
J8ACXL	Yes	Yes
JAD362	Yes	Yes
JBX833	Yes	Yes
JCHXLJ	Yes	Yes
JGVDFG	Yes	Yes
JNJJEC	Yes	Yes
JP63TF	Yes	Yes
JQ2FG9	Yes	Yes
JYCH39	Yes	Yes
KFWUPZ	Yes	Yes
KPHYWY	Yes	Yes
KUFFBE	Yes	Yes
KXC23G	Yes	Yes
L8KVWA	Yes	Yes
LJTQV7	Yes	Yes
LLX97U	Yes	Yes
LV62JV	Yes	Yes
MV3VDL	Yes	Yes
N6MLF4	Yes	Yes

TABLE 1

WebCode	Item 2	Item 3	WebCode	Item 2	Item 3
N7FCLH	Yes	Yes	RY66WP	Yes	Yes
NBYRG6	Yes	Yes	RYJVFU	Yes	Yes
NF49N6	Yes	Yes	T8CJVW	Yes	Yes
NTCUAH	Yes	Yes	TDJTHT	Yes	Yes
NVFQEJ	Yes	Yes	TF6RFN	Yes	Yes
NXMW37	Yes	Yes	TMAFAP	Yes	Yes
NXNWYZ	Yes	Yes	UAJ2R8	Yes	Yes
P6JYXQ	Yes	Yes	UM9XVQ	Yes	Yes
P9JAUQ	Yes	Yes	VDCFUM	Yes	Yes
PLL6LQ	Yes	Yes	VJY942	Yes	Yes
PQ6EG7	Yes	Yes	VP62VC	Yes	Yes
PTN8UX	Yes	Yes	W4DYAK	Yes	Yes
PVBP9C	Yes	Yes	W7XEFX	Yes	Yes
Q2V82D	Yes	Yes	WFWVEF	Yes	Yes
Q4NVQ2	Yes	Yes	WTGBHE	Yes	Yes
Q6WAPU	Yes	Yes	WV8DR9	Yes	Yes
QQG8AQ	Yes	Yes	WWGLDE	Yes	Yes
QTKPNL	Yes	Yes	X8YGBT	Yes	Yes
QZNRTM	Yes	Yes	X9CTBJ	Yes	Yes
R7LXMF	Yes	Yes	XCRK3C	Yes	Yes
RA8KLU	No	No	XJQ8VW	Yes	Yes
RJTL26	No	No			

TABLE 1

WebCode	Item 2	Item 3	WebCode	Item 2	Item 3
XUALWE	Yes	Yes			
Y6KJBG	Yes	Yes			
YH49JM	Yes	Yes			
Z9T8XL	Yes	Yes			

Response Summary

Total Participants: 129

Were the suspect toolmarks on either of the paint can lids (Items 2 and 3) produced by the questioned screwdriver (Item 1)?

		ITEM 2	ITEM 3
Responses	Yes	**127** *(98.4%)*	**126** *(97.7%)*
	No	**2** *(1.6%)*	**3** *(2.3%)*
	Inc	**0** *(0.0%)*	**0** *(0.0%)*

Conclusions

TABLE 2

WebCode	Conclusions
2B2QRC	EVIDENCE SUBMITTED: Lab Item #, Agency Item #, Description: 1) T2: One (1) box containing: 1.1) T2: One (1) Stanley brand model 100 Plus flathead screwdriver. 1.2) T2: One (1) paint can lid. 1.3) T2: One (1) paint can lid. CONCLUSIONS OF ANALYSIS: The two (2) toolmarks, items 1.2 and 1.3, were each identified as having been made by the screwdriver, item 1.1. Note: Identifications are based on the agreement of all discernable class characteristics and agreement of corresponding individual microscopic markings.
2EP3T3	Macroscopic and microscopic examination of Exhibits 1 through 3 determined the following: Exhibit 1 is a Stanley brand standard slotted screwdriver with a blade width of approximately 1/4 of an inch and bears toolmarks of value for comparison. Test impressions were taken of Exhibit 1 for comparative purposes and designated 1.1. Exhibits 2 and 3 each contain an impression produced by a flat bladed tool with a blade width of approximately 1/4 of an inch and bear toolmarks of value for comparison. Microscopic comparison of Exhibits 2 and 3 with the Exhibit 1.1 test specimens identified the Exhibit 2 and 3 impressions as having been produced by Exhibit 1. (Source Identification)
2FXCKZ	Results: IDENTIFICATION: The following items were compared and were found to show the presence of matching features. The opinion of Identification is based upon the agreement of a combination of individual characteristics and all discernible class characteristics consistent with having been created by the same tool. Item 1(test toolmarks from screwdriver). Item 2. Item 3.
2L6NVF	[No Conclusions Reported.]
2L8DZC	The impressed toolmarks in Items 2 and 3 were made by the screwdriver in Item 1 based on an agreement of class and individual characteristics.
2M22H8	In my opinion the marks on items 2 and 3 were made by the submitted screwdriver item 1 (conclusive association.)
2R3NGQ	The screwdriver (Item 1) was examined. The paint can lids (Item 2 and Item 3) were examined. One impressed mark on each lid was observed. The screwdriver was used to make test marks in lead and on a paint can lid. The test marks were microscopically compared to the two impressed marks (Item 2 and Item 3). Sufficient agreement in class and individual characteristics was observed between test toolmarks and the toolmarks on Item 2 and Item 3 to conclude that the screwdriver (Item 1) was used to make the impressed marks on the paint can lids (Item 2 and Item 3).
32TDA9	Test marks (TKT) obtained from item 1/KT1 were microscopically compared to the tool mark impressions on items 2/QT1 and 3/QT2. Item 1/KT1 was identified as having damage items 2/QT1 and 3/QT2 due to sufficient agreement of class and individual characteristics.
32W4E7	EXAMINATIONS SHOWED ITEMS 2 AND 3 WERE MADE BY ITEM 1.
3DNMVW	Test impressions made with the recovered screwdriver (item 1) were compared to the submitted tool marks in the lids #2 and #3. Significant matching microscopic detail was observed. Therefore this comparison meets the AFTE definition of "identification" that screwdriver #1 caused the impressions on lids #2 and #3.
3NAQ3W	Using item 1 (screw driver) controls were made & after comparing the controls with item 2 & item 3, it was concluded that same tool was used to struck the two paint can lids which were recovered from scene.
3UL3KQ	The toolmarks on Item 2 and Item 3 were identified as having been made by Item 1 based on sufficient agreement of the class and individual characteristics.
3ZLWFJ	Tool marks observed on Items 2 and 3 (metal can lids) are identified as having been produced by Item 1 (screwdriver).
4EGZXF	Tool marks observed on Items 1B (2) and 1C (3) (metal lids) are identified as having been produced

TABLE 2

WebCode	Conclusions
	by Item 1A (screwdriver).
4NLTMA	Items: Description/Visual Examination. Item 1: One (1) Stanley 100 PLUS flathead screwdriver with yellow and black handle. Item 2: One (1) small paint can lid with toolmark impression and a blue line. Item 3: One (1) small paint can lid with toolmark impression and a red line. Examination Results: Test toolmark impressions of Item 1 were produced using the provided paint can lids. Microscopic Comparison Conclusions: Identification: Based upon the reproducibility of class characteristics and microscopic individual characteristics, the following identifications were made: Lab Item #, Evidence Type, Conclusion: Items 2 & 3: Toolmark impressions Created by Item 1 (flathead screwdriver).
62JAJQ	The Stanley screwdriver was microscopically identified as the tool that made the impressed markings on the paint can lids Item 2 and Item 3.
63FW7Q	The signals observed in the ITEM2 and ITEM3 have been produced by the ITEM1 (tool).
667ZWC	Items #2 & #3 toolmarks were compared microscopically with each other and with test toolmarks made by the submitted screwdriver, Item #1. Based on the agreement of all discernible class characteristics and sufficient agreement of individual characteristics, Items #2-3 toolmarks were made by the submitted screwdriver, Item #1.
6LGJV4	Item 2 and Item 3 were made by Item 1.
6URNZH	[No Conclusions Reported.]
7N2QUR	When comparing the tracks between item 2 and 3, numerous individual characteristics could be found. It strongly suggests that the two tracks were caused by the same tool. The seized tool (screwdriver) Item 1 was compared with the two tracks Item 2 and 3. For comparison tracks were created. During the comparison, matching, individual characteristics were found at various points, which strongly suggest that the two tracks Item 2 and Item 3 were caused by the seized screwdriver Item 1.
7NEFVJ	It was determined utilizing stereomicroscopic and comparison microscopic examination that the questioned partial toolmark impressions from item 2 and item 3were positively made by the item 1 tool.
83UX8J	1. Examination of Exhibit 1 revealed one “Stanley 100 plus” model # 66-164-A slotted screwdriver with yellow and black handle and can be used as a compression and/or prying type tool. Measuring 207.96 in length. Tip measured 6.75mm wide. 2. Exhibit 1.1 (test marks) was created using the Exhibit 1 screwdriver and the provided paint can lids. 3. Examination of Exhibits 2 and 3 revealed one paint can lid with damage consistent with that caused by the tip of a slotted screwdriver. 4. Microscopic comparison revealed the damage on Exhibits 2 and 3 was caused by Exhibit 1 tool based on a sufficient agreement of individual characteristics. All measurements are approximates. TECHNICAL NOTES: Class characteristics are defined as measurable features of a firearm/tool which indicate a restricted group source. They result from design features and are determined prior to manufacture of the firearm/tool. Individual characteristics are defined as marks produced by the random imperfections or irregularities of firearm/tool surfaces. These random imperfections or irregularities are produced incidental to manufacture and/or caused by use, corrosion, or damage, and are unique to that specific tool. Any conclusions indicating that a toolmark was made by a specific firearm/tool are not to the absolute exclusion of all other firearms/tools because it is not feasible to examine all possible firearms/tools. However, observing this amount of agreement from a different source is considered extremely remote.
8DDC7F	Visual and microscopic analysis of the evidence paint can lids Q1 and Q2 (item 2 and item 3) and toolmark impressions made with the K1 screwdriver (item 1) were performed on November 3, 2022 and the result of the comparisons and evaluations are as follows: Based on agreement of discernible class characteristics and sufficient agreement of individual characteristics, the toolmark impressions on Q1 and Q2 (item 2 and item 3) are identified as having been made with the suspect screwdriver K1 (item 1).
8DDCBL	1. Exhibit 1 (Stanley 100 Plus slotted screwdriver with yellow and black handle) is designed to be used

TABLE 2

WebCode	Conclusions
	as a prying tool and could be used as a compression type tool. Exhibit 1 was used to create Exhibit 1.1 test standards and will be returned with Exhibit 1. 2. Examination of Exhibits 2 and 3 revealed each are a paint can lid with a rectangular impression toolmark. Toolmarks observed on Exhibits 2 and 3 are consistent with being made by a tool used as a compression type one such as a screwdriver or a chisel. 3. Microscopic comparison revealed impressed toolmarks on Exhibits 2 and 3 were created by Exhibit 1 due to an agreement of class and sufficient agreement of individual characteristics.
8JMVTM	Tool Mark Analysis: Methodology: Physical (Visual Examination), Microscopy (Comparison Microscope). Test marks were made with Item 1, the screwdriver, using submitted testing media. Item 1A, the test marks, was sealed in a manila envelope and will be returned with the evidence to the submitting agency. The tool marks on Items 2 and 3, the paint can lids, were made with Item 1, the screwdriver, based upon corresponding class and individual microscopic characteristics.
8LR6HB	Results of Physical/Microscopic Examination: Tool marks observed on Items 2 and 3 (small metal paint can lids) are identified as having been produced by Item 1 (Flat bladed Stanley 100 Plus 66-164-A screwdriver).
8YBNCZ	The suspect toolmarks on the paint can lids (Items 2 and 3) were produced by the questioned screwdriver (Item 1).
8YTW4F	Based on microscopic comparisons, in the opinion of the laboratory, the toolmarks in items 1-2-1 and 1-3-1 (CTS items 2 and 3) metal lids were identified as having been made by the item 1-1-1 screwdriver (CTS item 1).
8ZRW8L	1. Exhibit 1 is a Stanley brand flat head screwdriver, model 66-164-A. a. Examination disclosed that it is designed as a flat bladed tool and could be used as an improvised stabbing tool. b. Exhibit 1 was used to create the Exhibit 1.1 test standards. 2. Exhibit 2 and Exhibit 3 each contain one paint can lid. a. Examination disclosed damage that is consistent with a flat bladed tool such as a screwdriver or similar tool. b. The Exhibit 2.1 silicone cast and Exhibit 3.1 silicone cast were created to facilitate microscopic comparison. c. Microscopic comparison disclosed sufficient agreement of class and individual characteristics to conclude that the Exhibit 2 and Exhibit 3 paint can lids were damaged by the Exhibit 1 screwdriver.
9C7KFL	Tool Mark Analysis: Methodology: Physical (Visual Examination), Microscopy (Comparison Microscopy). Test marks were made with Item 1, the Stanley flat head screwdriver, using submitted testing media. Item 1A, the test marks, was sealed in a manila envelope and will be returned with the evidence to the submitted agency. The tool marks on Items 2 and 3, the paint can lids, were made with Item 1, the Stanley flat head screwdriver, based upon different class and individual microscopic characteristics.
9GE74J	The impression found on both Item 2 and Item 3 were microscopically identified as having been caused by the Item 1 screwdriver.
9JTJY4	An examination had been conducted with the comparison microscope, and we found a high level of correspondence between the toolmarks on Item 2 and Item 3. Then, we made test marks on can lid with the suspected screwdriver, and compared it to Item 2 and Item 3. The defects of the toolmark contour were checked, and we found sufficient agreement of individual characteristics between test mark and both Item 2 and Item 3. Therefore, we had a conclusion that the toolmarks on Item 2 and 3 were produced by the suspected screwdriver.
9N8UGE	The toolmarks present on the Items 2 and 3 paint can lids were made by the Item 1 screwdriver. These identifications are based on sufficient agreement of the combination of individual characteristics and all discernible class characteristics.
9Q7LTM	The indent marks in items 2 and 3 were made by the screwdriver in item 1
9T4LK6	The First paint can lid recovered from scene (marked with blue paint) and the second paint can lid recovered from scene (marked with red paint) have been punched in the lid by using Screwdriver recovered from suspect.

TABLE 2

WebCode	Conclusions
9W6KZ4	Item 1.1 is a Stanley brand flat blade screwdriver. Tests impressions using Item 1.1 were made using the provided paint can lids from Item 1.4. Items 1.2 and 1.3 are two 3 inch diameter paint can lids with impressed toolmarks. The tests from Item 1.1 were microscopically compared to the evidence marks on Items 1.2 and 1.3. Based on agreement of all discernible class characteristics and corresponding individual detail in the tool marks, the impressed toolmarks from Items 1.2 and 1.3 were identified as having been made by Item 1.1.
A9DPNB	The toolmarks observed on the paint can lids in Items 2 and 3 were produced by the screwdriver in Item 1, based on agreement observed in individual characteristics.
AD4C3G	1. Intercomparison of Exhibit 2 and Exhibit 3 presented an agreement of discernable class characteristics and sufficient agreement of individual characteristics when compared. Therefore; Exhibit 2 and Exhibit 3 were identified as having been damaged by the same tool (Exhibit 1). 2. Exhibit 2 paint can lid, presented an agreement of discernable class characteristics and sufficient agreement of Individual characteristics when compared to tests created from Exhibit 1. Therefore; Exhibit 2 (paint can lid) was identified as having been damaged by the Exhibit 1 Stanley 100 PLUS flathead screwdriver. 3. Exhibit 3 paint can lid, presented an agreement of discernable class characteristics and sufficient agreement of individual characteristics when compared to tests created from Exhibit 1. Therefore; Exhibit 3 (paint can lid) was identified as having been damaged by the Exhibit 1 Stanley 100 PLUS flathead screwdriver.
AR7NRN	[No Conclusions Reported.]
AUD32F	The examination of the set comparison marks of the suspect's screwdriver on the comparison paint can lids revealed similarities in the shape and size of the tip of the screwdriver, which are also shown on the crime impressions of the paint can lids item 2 and item 3. A microscopic comparison examination revealed significant similarities in both crime marks. Therefore, it is very likely that both marks on the paint can lids (item 2 and item 3) were caused by the suspect's screwdriver.
BEYYDZ	The impressed toolmarks in Items 2 and 3 were examined and found upon microscopic comparison to have been caused by the screwdriver in Item 1. These identification were based on an agreement of both class and individual characteristics.
BGJ94C	Based on the comparison of suspect toolmarks on the two paint can lids marked "Item 2" and "Item 3" and test marks made by the questioned screwdriver marked "Item 1", the suspect toolmarks on the two paint can lids marked "Item 2" and "Item 3" were made by the questioned screwdriver marked "Item 1".
BMT672	The Item 1 screwdriver was examined and test standards were obtained for future reference and used for comparisons to the Item 2 and Item 3 lids. Agreement of class and sufficient agreement of individual characteristics confirmed the tool marks observed on the Item 2 and Item 3 lids were made by the Item 1 screwdriver.
CFPKLG	Through macroscopic/microscopic examination and based on agreement of discernible class characteristics and sufficient corresponding individual detail, the toolmarks of interest exhibited on the paint can lids, Laboratory Items 2 and 3, were identified as having been created by the use of the Stanley screwdriver, Laboratory Item 1.
CQKWUN	The impressed toolmark exhibited on the paint can lid marked #2 (blue paint) was compared microscopically to test standards from the screwdriver marked #1 and was identified as having been made by the submitted tool. The impressed toolmark exhibited on the paint can lid marked #3 (red paint) was compared microscopically to test standards from the screwdriver marked #1 and was identified as having been made by the submitted tool.
DARM44	Toolmarks on either of the paint can lids (Items 2 marked with blue paint, and Item 3 marked with red paint) recovered from scene, were made by screwdriver recovered from suspect (Item 1).
DEQWHC	Item 2 toolmark was identified as having been produced by Item 1. Item 3 toolmark was excluded as having been produced by Item 1.

TABLE 2

WebCode	Conclusions
DMGHLP	Items 2 and 3 were made by item 1. There was sufficient agreement of microscopic surface contours for identification.
DRDBDY	The toolmark impressions on the first paint can lid and second paint can lid recovered from scene (Items 2 and 3) were consistent in class and individual characteristics to that of the test cut toolmark impressions made by the questioned screwdriver recovered from suspect (Item 1). Therefore, in my professional opinion, the questioned screwdriver (Item 1) was used to make the toolmark impressions in both Items 2 and 3.
DTQHZ2	Test marks were made with Item 1, the screwdriver, using submitted testing material. The tool marks on Items 2 and 3 were made by Item 1 based on agreement of all discernable class characteristics and significant agreement of individual microscopic characteristics.
E3QLQG	The toolmarks impressed on exhibit 2 and exhibit 3 were identified as having been made by the submitted Stanley screwdriver, exhibit 1.
E6VDC3	Examinations showed the tool marks on Items 2 and 3 were produced by Item 1.
EDMWTV	Test impressions from the screwdriver marked #1 were examined and microscopically compared to the impressions on the lids marked #2 and #3 with positive (identification) results. The screwdriver marked #1 made the impressions on both lids marked #2 and #3.
EZ4ALJ	Examined the specimen marked #1. It is a Stanley brand flared tip slotted screwdriver. Examined the specimen marked #2. It is a metal paint can lid. Examined the specimen marked #3. It is a metal paint can lid. The paint can lid marked #2 exhibits an impressed toolmark. This toolmark was microscopically compared to test standards and identified as having been made by the submitted screwdriver. The paint can lid marked #3 exhibits an impressed toolmark. This toolmark was microscopically compared to test standards and identified as having been made by the submitted screwdriver.
F3MGPC	Examination revealed Exhibit 1 is a Stanley flathead screwdriver, designed to be used as a prying/compression type tool. The Exhibit 1 screwdriver was used to create Exhibit 1.1 test marks. Microscopic examination of Exhibits 2 and 3 (paint can lids) revealed each had 1 toolmark suitable for comparison. These toolmarks are consistent with damage from a compression type tool. Microscopic comparison concluded that the toolmarks observed on Exhibits 2 and 3 were made by Exhibit 1 based on an agreement of class characteristics and a sufficient agreement of individual characteristics.
F3NFK7	Visual and microscopic analyses of evidence paint can lids Item 2 and Item 3 (Q1 and Q2), and the toolmark impressions produced with evidence screwdriver Item 1 (K1) were initiated on November 4, 2022. The results of the comparisons and evaluations are as follows: Based on agreement of discernible class characteristics and sufficient agreement of individual characteristics, the toolmark impressions on Item 2 and Item 3 (Q1 and Q2) were identified as having been produced with evidence screwdriver Item 1 (K1).
FPJXA7	Tool marks observed on Items #2 and #3 (metal paint can lids) are identified as having been produced by the flat tip of Item #1 (screwdriver).
FPJYV6	The impressed tool marks on Item 2 and Item 3 paint can lids were produced by Item 1 screwdriver.
G746KA	The toolmarks on the Item 2 and 3 metal lids are identified as having been made by the Item 1 screwdriver.
H6MD6X	The Items 01-02 and 01-03 paint can lids were identified as having been struck by the Item 01-01 Stanley screwdriver.
HKGTD4	The toolmarks impressed on Item 2 (exhibit 2) and Item 3 (exhibit 3) were identified as having been made by the submitted Stanley Screwdriver, Item 1 (exhibit 1).
HZTJ3P	Q1: The Q1 screwdriver is a Stanley brand tool wit ha transparent black/yellow handle, approximately 8 1/4" in total length, with a magnetic flat tip, approximately 1/4" wide. It is suitable for comparison purposes. Q2 & Q3: Toolmarks present on items Q2 & Q3 were microscopically examined,

TABLE 2

WebCode	Conclusions
	compared and identified as having been produced by the same tool, item Q1. K1: Sub-item K1 was used to produce test mark samples of item Q1 tip, for comparison purposes.
J8ACXL	This report refers to exhibits by Lab Number. The following results only apply to the items tested. The Exhibit 1 screwdriver was used to make test toolmarks. The test toolmarks were designated as Exhibit 1.1. The Exhibit 2 and 3 toolmarks were identified as having been made by the Exhibit 1 screwdriver.
JAD362	Results of Physical/Microscopic Examination: Tool marks observed on Items 1-2 and 1-3 (metal lids) are identified as having been produced by Item 1-1 (Stanley screwdriver). Conclusion Scale for Microscopic Comparisons: The following descriptions are meant to provide context to the levels of opinions reached in this report. Identification: This is the strongest statement of association that can be expressed. An identification is made to a degree of practical certainty when there is agreement of all discernible class characteristics and sufficient agreement of the individual characteristics of toolmarks. When sufficient agreement exists, in part, this means the likelihood of another tool producing the same marks is so remote it is considered a practical impossibility. Elimination: This is the strongest statement of non-association that can be expressed. An elimination is made when it is physically impossible (i.e., there is a clear, demonstrable incompatibility in class characteristics) for the items to have been marked by the same tool/fired in the same firearm. Inconclusive: An inconclusive is made when one of the following situations is true. Agreement of all discernible class characteristics and some agreement of individual characteristics, but insufficient for identification. Agreement of all discernible class characteristics without agreement or disagreement of individual characteristics due to an absence, insufficiency, or lack of reproducibility. Agreement of all discernible class characteristics and disagreement of individual characteristics. Unsuitable: An item is considered unsuitable for comparison. The interpretation of the data and authorization of the results was performed by the undersigned forensic analyst. Other staff members may have performed laboratory activities concerning evidence associated with this report. For a complete listing of all staff members who performed laboratory activities in this case, please contact the laboratory via the telephone number above.
JBX833	A microscopic comparison between the exhibit toolmarks on Item 2 and Item 3 and test marks (T1 - T5) made by the exhibit screwdriver indicated that they had been made by the same tool.
JCHXLJ	A microscopic comparison was conducted between Items #2 and #3. The examinations determined that Items #2 and #3 were produced by the same tool due to a sufficient agreement between striations/impressions. A microscopic comparison was conducted between Test toolmarks #1 through #3, which were produced by Item #1 and Items #2, and #3. The examinations determined that Items #2 and #3 were produced by Item #1 due to agreement of individual characteristics.
JGVDFG	The two specimens marked #2 and #3 were compared microscopically against test standards (#1) and identified as having been struck by the submitted screwdriver (#1).
JNJJEC	Toolmark Analysis: Methodology: Physical (Visual Examination), Digital Caliper/Digital Micrometer, Microscopy (Comparison Microscopy). Test marks were made with Item 1, the Stanley screwdriver, using the submitted testing material. Item 1A, the test marks, was sealed in a manila envelope and will be returned with the evidence to the submitting agency. The tool mark on Items 2 and 3, the paint can lids, were made with Item 1, the Stanley screwdriver, based upon corresponding class and individual microscopic characteristics.
JP63TF	Toolmarks present in each paint can lid identified as Item 2 and Item 3, were produced by Screwdriver identified as Item 1.
JQ2FG9	The results shows with great certainty that the screwdriver (item 1) has made the marks on both lids (item 2 and item 3).
JYCH39	The toolmarks on Items 2 and 3 were compared to test marks made with Item1, using a comparison microscope. There is sufficient agreement of class and individual characteristics to determine that the toolmarks on Items 2 and 3 had been caused by Item 1.
KFWUPZ	On the paint can lids of the items 2 and 3 there are toolmarks which correspond in width, form and

TABLE 2

WebCode	Conclusions
	few individual characteristics with the tip/end of the screwdriver of the item 1. The toolmarks on the items 2 and 3 have been made with the screwdriver of the item 1.
KPHYWY	Impression tests made by Item #1.1 were compared microscopically with impressions observed on Items #1.2-1.3. Based on the agreement of all discernible class characteristics and sufficient agreement of corresponding individual characteristics, the impressions on Items #1.2-1.3 have been identified as having been made by Item #1.1.
KUFFBE	[No Conclusions Reported.]
KXC23G	It is to be taken into closest consideration that the two impression marks on the lids of the paint cans (item 2 and item 3) were made by the screwdriver (item 1) found on the defendant.
L8KVWA	There are sufficient individual markings present to identify Item 1 (screwdriver) as the tool used to damage Items 2 and 3 (paint can lids).
LJTQV7	1. Examination of Exhibit 1 revealed one Stanley brand flat head screwdriver designed to be used as a prying tool. Exhibit 1 was used to create the Exhibit 1.1 test standards. 2. Examination of Exhibits 2 and 3 revealed each contains one paint can lid recovered from the scene displaying damage consistent with that caused by a compression tool such as a hammer and a chisel or similar tool. 3. Due to the configuration of the damage observed on Exhibits 2 and 3, the Exhibit 1 screwdriver was examined for its use as a compression tool. 4. Microscopic comparison revealed the damage on Exhibits 2 and 3 were caused by Exhibit 1 due to sufficient agreement of individual characteristics.
LLX97U	Toolmarks present on the Items 2 and 3 lids were identified as having been produced by the Item 1 screwdriver.
LV62JV	As a result of the microscopic comparsion it is definite, that the toolmarks on the can lids marked as "Item 2" and "Item 3" have been produced with the screwdriver marked as "Item 1".
MV3VDL	Item 1 is an 8 1/4" Stanley 100 PLUS brand, model 66-164A flat head screwdriver. Item 2 is a 3 1/8" round paint can lid with an impressed toolmark. Item 3 is a 3 1/8" round paint can lid with an impressed toolmark. Items 2 and 3 exhibited impressed toolmarks that were microscopically compared to each other and then to test impression toolmarks made by the Item 1 screwdriver. The impressed toolmarks on Items 2 and 3 were identified as having been made by the Item 1 screwdriver.
N6MLF4	Microscopic examination and comparison of the questioned impression tool marks on paint can lids (items # 2 and 3) with known test tool marks produced with the screwdriver (item # 1) on the supplied test paint can lids reveal sufficient tool mark evidence to conclude that the questioned tool marks on the paint can lids (items # 2 and 3) were produced by the screwdriver (item # 1).
N7FCLH	Examinations showed that the tool marks on Item 2 were produced by the Item 1 screwdriver. Examinations showed that the tool marks on Item 3 were produced by the Item 1 screwdriver.
NBYRG6	The impressed marks on the item 2 and item 3 lids were identified as having been produced by the item 1 screwdriver. Identification is the strongest level of positive association.
NF49N6	Through macroscopic/microscopic examination and based on agreement of discernible class characteristics and sufficient corresponding individual detail, the toolmarks of interest exhibited on the paint can lids, Laboratory Items 2 and 3, were identified as having been created by the use of the screwdriver, Laboratory Item 1.
NTCUAH	The impressed toolmarks on items 2 and 3 were made by tool item 1, based on the agreement of all discernible class characteristics and corresponding individual detail.
NVFQEJ	[No Conclusions Reported.]
NXMW37	1. Exhibit 1 is a Stanley brand flat blade screwdriver designed to be used as a prying, striking, or scraping tool. The screwdriver was used to create the Exhibit 1.1 test standards which include casts of the test marks. 2. Examination of Exhibits 2 and 3 revealed two paint can lids, one each, with damage in the middle consistent with having been caused by a flat bladed tool such as a screwdriver or similar

TABLE 2

WebCode	Conclusions
	tool. a. Casts of Exhibits 2 and 3. Exhibits 2.1 and 3.1 respectively, were created to facilitate microscopic comparison. b. Microscopic comparison revealed that Exhibit 1 caused the damaged to Exhibits 2 and 3 based on sufficient agreement of class and individual characteristics.
NXNWYZ	Upon examination, I found that the characteristics marks on the first and second can lids recovered from scene (Item 2 and Item 3) to be similar with the characteristics marks produced by the screwdriver recovered from the suspect (Item 1). Hence, I am of the opinion that the toolmarks on the first and second can lids recovered from scene (Item 2 and Item 3) were produced by the questioned screwdriver (Item 1).
P6JYXQ	The toolmarks on the Items 01-02 and 01-03 paint can lids were identified as having been made by the Item 01-01 Stanley screwdriver.
P9JAUQ	The two punch defects in the submitted paint can lids, Agency Exhibits 2 and 3, were made by the submitted Stanley screwdriver, Agency Exhibit 1.
PLL6LQ	[No Conclusions Reported.]
PQ6EG7	The results extremely strongly support that the toolmark on Item 2 was produced with the screwdriver Item 1 (Level +4). The results extremely strongly support that the toolmark on Item 3 was produced with the screwdriver Item 1 (Level +4).
PTN8UX	Observed toolmarks on Item 2 and Item 3 have been produced by Item1.
PVBP9C	Tool marks present in both of the lid cans labeled as Item 2 and Item 3, were produced with the screw driver labeled as Item 1.
Q2V82D	The Exhibit 1 screwdriver was used to make test toolmarks. The test toolmarks were designated as Exhibit 1.1. The Exhibit 2 and 3 toolmarks were identified as having been made by the Exhibit 1 tool.
Q4NVQ2	1. Examination of Exhibit 1 disclosed it to be a Stanley 100 PLUS flathead screwdriver consistent with being used as a prying type tool. Exhibit 1 was used to create Exhibit 1.1 (Test Toolmarks) for microscopic comparison. 2. Examination of Exhibits 2 and 3 disclosed them to be two ferromagnetic paint can lids displaying damage in their centers. A. Exhibit 2 is 78.53mm in diameter, and the damage is 6.90mm in length. B. Exhibit 3 is 78.60mm in diameter, and the damage is 7.04mm in length. 3. Exhibits 2 and 3 were microscopically compared to Exhibit 1.1. Due to a sufficient agreement of individual characteristics, it was determined that the damage displayed on Exhibits 2 and 3 was caused by Exhibit 1. All measurements are approximates.
Q6WAPU	Items 2 and 3 were identified as having been marked by Item 1 based on the agreement of class characteristics, and individual characteristics observed within the marked surfaces (toolmarks).
QQG8AQ	The suspect toolmarks on either of the paint can lids (Items 2 and 3) have been produced by the questioned screwdriver (Item 1).
QTKPNL	Test standards were made using the item #1 Stanley 100 PLUS 66-164-A screwdriver and compared to the damage on the item #2 and item #3 two paint can lids with positive results. (Identification) The damage on the item #2 and item #3 paint can lids was identified as having been made by the blade of the item #1 Stanley screwdriver.
QZNRTM	Toolmarks present on Items 2 and 3 were microscopically examined and identified as having been produced by the Item 1 screwdriver, based on corresponding class and individual characteristics. Six tests produced using the Item 1 tool and laboratory stock material are being returned as Item 1T in Container 1 and should be maintained for possible future examinations.
R7LXMF	Examinations showed the tool marks present on Items 2 and 3 were produced by Item 1.
RA8KLU	A comparison of the tool marks on the paint can lids in items 2 and 3 with test marks made using the suspected screwdriver, item 1 was undertaken. A high degree of correspondence was noted between the marks on items 2 and 3. However, there was no correspondence with the tool marks on items 2 and 3 and the test marks. I have considered the proposition that the tool marks on the paint lids in

TABLE 2

WebCode	Conclusions
	items 2 and 3 were made using the suspected screwdriver; the results of the examination provide no support for this proposition. The tool marks on the paint lids in items 2 and 3 have not been made by the submitted tool, item 1.
RJTL26	Item 2 = Item 3.
RY66WP	The impressed toolmark observed on the submitted paint can lid, Item 2, was produced by the submitted screwdriver, Item 1. The impressed toolmark observed on the submitted paint can lid, Item 3, was produced by the submitted screwdriver, Item 1.
RYJVFU	Each of the two damaged paint can lids (Item 2, Item 3) recovered from scene bears an impressed (compression) toolmark the class characteristics of which probably correspond those of a screwdriver tip or a similar tool. Upon close examination, the subclass and individual characteristics of the toolmark of Item 2 are identical to those of the toolmark of Item 3; therefore, the two marks originate from the very same tool. For comparison purpose, we produced compression test marks by striking the tailpiece of the handle of the questioned screwdriver (Item 1), after placing the tip of the latter against the provided test lids. Upon inspection, we observed that the test marks had sufficient and reproductible individual characteristics to allow suitable comparisons. Thereafter, we observed that the subclass characteristics and individual characteristics of the test toolmarks match those of the toolmark on Item 3 and those of the toolmark on Item 2. Thus, we can conclude that the toolmarks on Item 2 and on Item 3 were both produced by the questioned screwdriver (Item 1).
T8CJVW	Item 1 is identified as having created the toolmarks displayed on items 2 and 3.
TDJTHT	Items: Description/Visual Examination: Item 1: One (1) Stanley 100 Plus (66-164-A) screwdriver with black & yellow handle, approximately 8 5/16" in length. Item 2: One (1) paint can lid with impression type toolmark present approximately 5/16" in length & 1/16" wide. Item 3: One (1) paint can lid with impression type toolmark present approximately 5/16" in length & 1/16" wide. Examination Results: Test toolmarks were created on lead standards & paint can lids with Item 1 for microscopic comparison purposes. Microscopic Comparison Conclusions: Identification: Based upon the reproducibility of class characteristics and microscopic individual characteristics, the following identifications were made: Items 2 & 3 (impressed type toolmarks) created by Item 1 (Stanley 100 Plus screwdriver)
TF6RFN	Both toolmarks (Item 2 and Item 3) were caused by the screwdriver (Item 1)
TMAFAP	Item 1 was identified as having been used on Item 2 and Item 3.
UAJ2R8	1. The tool marks on the paint can lids, described in items 2 and 3, were produced by the screwdriver described in item 1 (identification).
UM9XVQ	Tool marks observed on Items 1B and 1C (paint can lids) are identified as having been produced by Item 1A (Stanley brand flat head screwdriver). Test marks made from Item 1A will be returned to the submitting agency.
VDCFUM	The toolmark located on the paint can lids of items #2 and #3 were microscopically identified as having been made by the screwdriver of item #1.
VJY942	item 2 punched from suspect screwdriver. item 3 punched from suspect screwdriver.
VP62VC	1. Examinations showed the tool marks on Items 2 and 3 were produced by Item 1.
W4DYAK	The Stanley screwdriver, item 1, was identified as having made the tool marks on the paint can lids, items 2 and 3.
W7XEFX	I compared the paint can lids item 2 and 3 with test impression made with item 1 and found sufficient correspondence of individual marks between items 2 and 3 and test mark from item 1 for identification. Conclusion: Item 1 was used to cause the impression in both paint can lids item 2 and 3.
WFWVEF	Tool marks on items 001-02 and 001-03 were microscopically compared with each other and with

TABLE 2

WebCode	Conclusions
	test tool marks created using the 001-01 screwdriver on 001-04 and 001-05 reference lids with the following results: Tool marks on items 001-02 and 001-03 were identified as having been made with the 001-01 screwdriver.
WTGBHE	The Items 2 and 3 paint can lid toolmarks were microscopically compared to the Item 1 test toolmarks and determined to have consistent class characteristics and sufficient agreement of individual characteristics for an identification. Therefore, in the opinion of the examiner, the Items 2 and 3 paint can lid toolmarks were produced by the Item 1 screwdriver.
WV8DR9	The Exhibit 1 screwdriver was used to make test toolmarks. The test toolmarks were designated as Exhibit 1.1. The Exhibit 2 and 3 toolmarks were identified as having been made by the Exhibit 1 tool.
WWGLDE	[No Conclusions Reported.]
X8YGBT	The toolmarks present on the item 1.2 and 1.3 paint can lids are identified as having been created by the item 1.1 screwdriver.
X9CTBJ	Examinations showed the toolmarks present on Item 2 (C-1) and Item 3 (C-2) were produced by Item 1 (CDF).
XCRK3C	The test tool mark from the screwdriver marked #1 were examined and microscopically compared to the toolmark on item #2 and on item #3 with positive results. The screwdriver marked #1 was used to create the toolmarks on item #2 and item #3.
XJQ8VW	Our examination with a comparison light microscope leads us to the following conclusion: Item 2: The toolmark on the paint can lid (Item 2) and the comparison marks made by the screwdriver (Item 1) show numerous well matching marks with general and individual characteristics. The toolmark (Item 2) was caused by the screwdriver (Item 1). Item 3: The toolmark on the paint can lid (Item 3) and the comparison marks made by the screwdriver (Item 1) show numerous well matching marks with general and individual characteristics. The toolmark (Item 3) was caused by the screwdriver (Item 1).
XUALWE	Toolmarks present on Items 2 and 3 were microscopically examined and identified as having been produced by the Item 1 Stanley brand tool.
Y6KJBG	[No Conclusions Reported.]
YH49JM	In my opinion the exhibit screwdriver (Item 1) was the tool used to cause the impressed marks in the exhibit paint tins (Items 2 and 3).
Z9T8XL	During this examination I observed strong correspondence in the size, shape and depth of the impressed marks (all discernible class characteristics). I also observed strong correspondence in a large number of random/irregular characteristics throughout the entire impressed marks. Due to this sufficient agreement in individual characteristics, I therefore I formed the opinion that both the questioned impressed marks (Items 2 & 3), were made by the tip of the exhibit screwdriver (Item 1) - Identification.

Additional Comments

TABLE 3

WebCode	Additional Comments
4EGZXF	Edges of screwdriver blade has damage/irregularities. Identified on impression.
8DDC7F	SUFFICIENT AGREEMENT: Sufficient agreement exists between two toolmarks means that the agreement is of a quantity and quality that the likelihood another tool could have made the mark is so remote as to be considered a practical impossibility. Sufficient agreement is related to the significant duplication of random toolmarks as evidenced by a pattern or combination of patterns of surface contours.
8DDCBL	Technical notes: Class characteristics are defined as measureable features of a firearm/tool which indicate a restricted group source. They result from design features and are determined prior to manufacture of the firearm/tool. Individual characteristics are defined as marks produced by the random imperfections or irregularities of firearm/tool surfaces. These random imperfections or irregularities are produced incidental to manufacture and/or caused by use, corrosion, or damage, and are unique to that specific tool. Any conclusions indicating that a toolmark was made by a specific firearm/tool are not to the absolute exclusion of all other firearms/tools because it is not feasible to examine all possible firearms/tools. However, observing this amount of agreement from a different source is considered extremely remote.
8LR6HB	Conclusion Scale for Microscopic Comparisons: The following descriptions are meant to provide context to the levels of opinions reached in this report. Identification: This is the strongest statement of association that can be expressed. An identification is made to a degree of practical certainty when there is agreement of all discernible class characteristics and sufficient agreement of the individual characteristics of toolmarks. When sufficient agreement exists, in part, this means the likelihood of another tool producing the same marks is so remote it is considered a practical impossibility. Elimination: This is the strongest statement of non-association that can be expressed. An elimination is made when it is physically impossible (i.e., there is a clear, demonstrable incompatibility in class characteristics) for the items to have been marked by the same tool/fired in the same firearm. Inconclusive: An inconclusive is made when one of the following situations is true. Agreement of all discernible class characteristics and some agreement of individual characteristics, but insufficient for identification. Agreement of all discernible class characteristics without agreement or disagreement of individual characteristics due to an absence, insufficiency, or lack of reproducibility. Agreement of all discernible class characteristics and disagreement of individual characteristics. Unsuitable: An item is considered unsuitable for comparison when it does not bear any class, subclass, and/or individual toolmarks of value for microscopic comparison. Additional Information: There may be additional evidence associated with this case. Please refer to any previously completed case records for the lab numbers listed above. The interpretation of the data and authorization of the results was performed by the undersigned forensic analyst. Other staff members may have performed laboratory activities concerning evidence associated with this report. For a complete listing of all staff members who performed laboratory activities in this case, please contact the laboratory via the telephone number above.
8ZRW8L	TECHNICAL NOTES: Class characteristics are defined as measurable features of a firearm/tool which indicate a restricted group source. They result from design features and are determined prior to manufacture of the firearm/tool. Individual characteristics are defined as marks produced by the random imperfections or irregularities of firearm/tool surfaces. These random imperfections or irregularities are produced incidental to manufacture and/or caused by use, corrosion, or damage, and are unique to that specific tool. Any conclusions indicating that a toolmark was made by a specific firearm/tool are not to the absolute exclusion of all other firearms/tools because it is not feasible to examine all possible firearms/tools. However, observing this amount of agreement from a different source is considered extremely remote.
AD4C3G	1. Exhibit I was examined and determined to be, one (I) Stanley Brand, model 100 PLUS.¼" flathead screwdriver with a ferromagnetic hasp and working edge. This item is equipped with a synthetic (apparent plastic) yellow and black colored handle with an overall approximate length of ½". 2. Exhibit 2 was examined and determined to be one (I) paint can lid, with and approximate diameter of 3". There is a single centrally located impressed tool mark with an approximate width of¼". This tool mark Is

TABLE 3

WebCode	Additional Comments
	consistent with having been produced by a flat edged screwdriver or prying type tool. 3. Exhibit 3 was examined and determined to be one (l) paint can lid, with and approximate diameter of 3". There is a single centrally located impressed tool mark with an approximate width of ¼". This tool mark is consistent with having been produced by a flat edged screwdriver or prying type tool. 4. All measurements are approximate.
F3NFK7	"Sufficient agreement" exists between two toolmarks means that the agreement is of a quantity and quality that the likelihood another tool could have made the mark is so remote as to be considered a practical impossibility. Sufficient agreement is related to the significant duplication of random toolmarks as evidenced by a pattern or combination of patterns of surface contours. The above evidence will be retained within the Firearms Analysis Units evidence vault
FPJXA7	Conclusion Scale for Microscopic Comparisons: The following descriptions are meant to provide context to the levels of opinions reached in this report. Identification: This is the strongest statement of association that can be expressed. An identification is made to a degree of practical certainty when there is agreement of all discernible class characteristics and sufficient agreement of the individual characteristics of toolmarks. When sufficient agreement exists, in part, this means the likelihood of another tool producing the same marks is so remote it is considered a practical impossibility. Elimination: This is the strongest statement of non-association that can be expressed. An elimination is made when it is physically impossible (i.e., there is a clear, demonstrable incompatibility in class characteristics) for the items to have been marked by the same tool/fired in the same firearm. Inconclusive: An inconclusive is made when one of the following situations is true: Agreement of all discernible class characteristics and some agreement of individual characteristics, but insufficient for identification. Agreement of all discernible class characteristics without agreement or disagreement of individual characteristics due to an absence, insufficiency, or lack of reproducibility. Agreement of all discernible class characteristics and disagreement of individual characteristics. Unsuitable: An item is considered unsuitable for comparison when it does not bear any class, subclass, and/or individual toolmarks of value for microscopic comparison.
KXC23G	Comparison traces were made on an identical lid using the screwdriver (Item 1). The indentation trace that was most similar to the traces from the crime scene in terms of indentation depth was used for comparison. The indentation traces were scanned and compared using the ToolScan system from the LIM company.
LJTQV7	Technical Notes: Class characteristics are defined as measurable features of a firearm/tool which indicate a restricted group source. They result from design features and are determined prior to manufacture of the firearm/tool. Individual characteristics are defined as marks produced by the random imperfections or irregularities of firearm/tool surfaces. These random imperfections or irregularities are produced incidental to manufacture and/or caused by use, corrosion, or damage, and are unique to that specific tool. Any conclusions indicating that a toolmark was made by a specific firearm/tool are not to the absolute exclusion of all other firearms/tools because it is not feasible to examine all possible firearms/tools. However, observing this amount of agreement from a different source is considered extremely remote.
LV62JV	The comparsion has been performed with a comparsion microscope, using the original material.
NXMW37	TECHNICAL NOTES: Class characteristics are defined as measurable features of a firearm or tool, which indicate a restricted group source. They result from design features and are determined prior to manufacture of the firearm or tool. Individual characteristics are defined as marks produced by the random imperfections or irregularities of firearm or tool surfaces. These random imperfections or irregularities can be either produced incidental to manufacture or caused by use, corrosion, or damage, and are unique to that specific tool. Any conclusions indicating that a toolmark was made by a specific firearm or tool are not to the absolute exclusion of all other firearms or tools, because it is not feasible to examine all firearms or tools in the world. However, observing this amount of agreement between different sources is considered extremely remote.
Q4NVQ2	TECHNICAL NOTES: Class characteristics are defined as measurable features of a firearm/tool which indicate a restricted group source. They result from design features and are determined prior to manufacture of the firearm/tool. Individual characteristics are defined as marks produced by the random imperfections or irregularities of firearm/tool surfaces. These random imperfections or

TABLE 3

WebCode	Additional Comments
	irregularities are produced incidental to manufacture and/or caused by use, corrosion, or damage, and are unique to that specific tool. Any conclusions indicating that a toolmark was made by a specific firearm/tool are not to the absolute exclusion of all other firearms/tools because it is not feasible to examine all possible firearms/tools. However, observing this amount of agreement from a different source is considered extremely remote.
UAJ2R8	Identification: Based on agreement of individual characteristics observed by microscopic comparison examination.
UM9XVQ	Conclusion Scale for Microscopic Comparisons: The following descriptions are meant to provide context to the levels of opinions reached in this report. Identification: This is the strongest statement of association that can be expressed. An identification is made to a degree of practical certainty when there is agreement of all discernible class characteristics and sufficient agreement of the individual characteristics of toolmarks. When sufficient agreement exists, in part, this means the likelihood of another tool producing the same marks is so remote it is considered a practical impossibility. Elimination: This is the strongest statement of non-association that can be expressed. An elimination is made when it is physically impossible (i.e., there is a clear, demonstrable incompatibility in class characteristics) for the items to have been marked by the same tool/fired in the same firearm. Inconclusive: An inconclusive is made when one of the following situations is true. Agreement of all discernible class characteristics and some agreement of individual characteristics, but insufficient for identification. Agreement of all discernible class characteristics without agreement or disagreement of individual characteristics due to an absence, insufficiency, or lack of reproducibility. Agreement of all discernible class characteristics and disagreement of individual characteristics. Unsuitable: An item is considered unsuitable for comparison when it does not bear any class, subclass, and/or individual toolmarks of value for microscopic comparison. The interpretation of the data and authorization of the results was performed by the undersigned forensic analyst. Other staff members may have performed laboratory activities concerning evidence associated with this report. For a complete listing of all staff members who performed laboratory activities in this case, please contact the laboratory via the telephone number above.
W4DYAK	The Stanley flat-head screwdriver, item 1, was examined and test impressions were created in the submitted test material. The paint can lids, items 2 and 3 were examined and determined to each have one impressed/striated tool mark. The tool marks on each item were microscopically compared to the tests created with the Stanley screwdriver, item 1. Definitions Identification: The opinion of a qualified examiner that there is sufficient agreement of features and microscopic detail (class and individual characteristics) to conclude that two (or more) tool marks originated from the same source.

-End of Report-
(Appendix may follow)

Collaborative Testing Services ~ Forensic Testing Program

Test No. 22-5282: Toolmarks Examination

DATA MUST BE SUBMITTED BY **Nov. 14, 2022, 11:59 p.m.** TO BE INCLUDED IN THE REPORT

Participant Code: U1234A WebCode: NR6W72

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

Scenario:
Police are investigating the vandalism of a hardware store. Paint cans were found scattered around the floor leaking paint from holes that appeared to have been punched in the lid. A suspect was apprehended a few streets away, shortly after the incident occurred, and police seized a screwdriver from his possession. During the investigation, two paint can lids were recovered where the lids had been struck but not punctured. Investigators are submitting the screwdriver along with the two damaged paint can lids for your examination.

Please note the following:
- Each Item is in an envelope, it is suggested that when the items are removed from their labeled envelope, they be marked according to your laboratory procedure.

Items Submitted (Sample Pack T2):
Item 1: Screwdriver recovered from suspect.
Item 2: First paint can lid recovered from scene (marked with blue paint).
Item 3: Second paint can lid recovered from scene (marked with red paint).

1.) Were the suspect toolmarks on either of the paint can lids (Items 2 and 3) produced by the questioned screwdriver (Item 1)?

	Yes	No	Inconclusive*
Item 2:	○	○	○
Item 3:	○	○	○

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

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

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

3.) Additional Comments

RELEASE OF DATA TO ACCREDITATION BODIES

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

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

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

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

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

A2LA Certificate No.

Step 2: Complete the Laboratory Identifying Information in its entirety

Authorized Contact Person and Title

Laboratory Name

Location (City/State)