



Serial Number Restoration Test No. 16-5251 Summary Report

This test was sent to 177 participants. Each participant received a sample pack containing a piece of stainless steel bar stock which had been stamped with a six character serial number which was then obliterated. Also included was a piece of aluminum bar stock intended as a standard for the size, shape and positioning of the stamped characters. Participants were asked to restore the obliterated serial number. Data were returned from 151 participants (85% response rate) and are compiled into the following tables:

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

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

Manufacturer's Information

Each sample set consisted of a piece of stainless steel bar stock that contained an obliterated serial number (Item 1) and a piece of aluminum bar stock intended as a standard for the size, shape, and positioning of the stamped digits. Participants were requested to attempt to restore the obliterated serial number utilizing their laboratory restoration methodologies and report the recovered serial number. The serial number to be restored consisted of 6 characters (6AK187).

SAMPLE PREPARATION:

Each sample set contained a piece of 1" x ¼" x 2 ½" stainless steel bar stock that was stamped using a punch press. The stamp consisted of 6 characters (6AK187) that are 1/8" in height. The serial number was then obliterated by removing material from the bar stock using a vertical milling machine. A consistent amount of material was removed from each piece of bar stock.

A piece of aluminum bar stock was also included in the sample set and was intended as a standard for size, shape, and positioning of the stamped alphanumeric characters used in the serial number. The alphanumeric characters are digits 0-9 and letters A-F, H, J, K and N that are 1/8" in height.

SAMPLE SET ASSEMBLY:

An Item 1 was enclosed in chip board and the sides taped to securely contain the sample. The aluminum standard was wrapped in chip board and both were placed in their respective pre-labeled envelopes. Each sample pack was packaged with an Item 1 and aluminum standard. This process was repeated until all of the sample packs were prepared. Once verification was completed, all sample packs were sealed with a piece of evidence tape and initialed "CTS."

VERIFICATION:

Three predistribution laboratories restored the obliterated six character serial number and reported "6AK187". Two laboratories used a chemical restoration method for recovery and one laboratory used a magnetic restoration method for recovery.

Summary Comments

This test was designed to allow participants to assess their proficiency in the restoration of an obliterated serial number. Participants were provided with a piece of bar stock that contained an obliterated serial number (Item 1) and a piece of aluminum bar stock intended as a standard for the size, shape and positioning of the stamped characters. Participants were requested to restore the obliterated serial number utilizing their laboratory recovery methodologies and report the recovered serial number. The serial number to be restored consisted of 6 characters (6AK187). (Refer to Manufacturer's Information for preparation details.)

Of the 151 responding participants in Table 1: "Recovered Characters", 149 (98.7%) recovered the six characters consistent with the Manufacturer's Information. One participant restored five of the six characters and one participant did not restore any characters.

In Table 3: "Preparation Methods", the majority of participants used polishing or sanding to prepare their sample. In Table 4: "Recovery Methods", a vast majority of participants used chemical processing for the serial number restoration.

Recovered Characters

Please record the restored characters below.

TABLE 1

WebCode	Character 1	Character 2	Character 3	Character 4	Character 5	Character 6
2DZGLK	6	A	K	1	8	7
2LUP7B	6	A	K	1	8	7
32K79E	6	A	K	1	8	7
32ZXBQ	6	A	K	1	8	7
3C3QTB	6	A	K	1	8	7
3CX2EK	6	A	K	1	8	7
3E8JKN	6	A	K	1	8	7
3LNUZA	6	A	K	1	8	7
3M4L3M	6	A	K	1	8	7
3REWTV	6	A	K	1	8	7
4NQCCB	6	A	K	1	8	7
4QJDQU	6	A	K	1	8	7
4RPVPP	6	A	K	1	*	7
4T6HYR	6	A	K	1	8	7
4WZ98N	6	A	K	1	8	7
4XFXG9	6	A	K	1	8	7
6DMGT7	6	A	K	1	8	7
6DR79J	6	A	K	1	8	7
6JUFDQ	6	A	K	1	8	7
6K8H9J	6	A	K	1	8	7
6RAYWQ	6	A	K	1	8	7
6RPQWF	6	A	K	1	8	7
6ZYK3N	6	A	K	1	8	7

TABLE 1

WebCode	Character 1	Character 2	Character 3	Character 4	Character 5	Character 6
7A2JQF	6	A	K	1	8	7
7N4TVP	6	A	K	1	8	7
7NKH6A	6	A	K	1	8	7
7R44QP	6	A	K	1	8	7
84VHE7	6	A	K	1	8	7
88UNKH	6	A	K	1	8	7
8ECW9E	6	A	K	1	8	7
8FLCPE	6	A	K	1	8	7
8HC6DP	6	A	K	1	8	7
9ATRWH	6	A	K	1	8	7
9KFTED	6	A	K	1	8	7
9W9KDJ	6	A	K	1	8	7
9XYBA3	6	A	K	1	8	7
ABJC3E	6	A	K	1	8	7
ANC42J	6	A	K	1	8	7
APN4XE	6	A	K	1	8	7
AQXL4H	6	A	K	1	8	7
B2X9VE	6	A	K	1	8	7
BANU2C	6	A	K	1	8	7
BMRF43	6	A	K	1	8	7
BN877E	6	A	K	1	8	7
BNMX64	6	A	K	1	8	7
BP3P8F	6	A	K	1	8	7
BUBLZ9	6	A	K	1	8	7

TABLE 1

WebCode	Character 1	Character 2	Character 3	Character 4	Character 5	Character 6
BZ6HPZ	6	A	K	1	8	7
C2RDPD	6	A	K	1	8	7
C6QRC4	6	A	K	1	8	7
CCR49Z	6	A	K	1	8	7
CEBQUF	6	A	K	1	8	7
CFRMLE	6	A	K	1	8	7
CK3Z4D	6	A	K	1	8	7
CKHPEY	6	A	K	1	8	7
CN2CYD	6	A	K	1	8	7
D2MGT9	6	A	K	1	8	7
D6896B	6	A	K	1	8	7
DDFZ9E	6	A	K	1	8	7
DQ9Q7J	6	A	K	1	8	7
E2K93Z	6	A	K	1	8	7
EEADLD	6	A	K	1	8	7
ENW7K9	6	A	K	1	8	7
EQ4WZJ	6	A	K	1	8	7
ETRZHA	6	A	K	1	8	7
EVBRTC	6	A	K	1	8	7
F6EWAE	6	A	K	1	8	7
FKBCA9	6	A	K	1	8	7
FTZWF7	6	A	K	1	8	7
GEZQ9A	6	A	K	1	8	7
GHH83Y	6	A	K	1	8	7

TABLE 1

WebCode	Character 1	Character 2	Character 3	Character 4	Character 5	Character 6
GQ9T9X	6	A	K	1	8	7
H6PF8G	6	A	K	1	8	7
H8XZ4A	6	A	K	1	8	7
HAI3M3	6	A	K	1	8	7
HAJDW8	6	A	K	1	8	7
HHCDWY	6	A	K	1	8	7
HM4KF8	6	A	K	1	8	7
HM6GQ3	6	A	K	1	8	7
HNZZR4	(6)	(A)	(K)	1	8	7
HWEL3T	6	A	K	1	8	7
HXQLX3	6	A	K	1	8	7
J2MWK9	6	A	K	1	8	7
J3YTPD	6	A	K	1	8	7
JBU8ZR	6	A	K	1	8	7
JM8YE9	6	A	K	1	8	7
JNH7QU	6	A	K	1	8	7
K4RGU8	6	A	K	1	8	7
K8A78C	6	A	K	1	8	7
KAE8G3	6	A	K	1	8	7
KB9KU2	6	A	K	1	8	7
KDBH39	6	A	K	1	8	7
KKBBKW	6	A	K	1	8	7
KLQ2M9	6	A	K	1	8	7
KM2498	6	A	K	1	8	7

TABLE 1

WebCode	Character 1	Character 2	Character 3	Character 4	Character 5	Character 6
KZNLB4	6	A	K	1	8	7
L2C6H3	6	A	K	1	8	7
L2HQ64	6	A	K	1	8	7
L7NKYY	6	A	K	1	8	7
LCULBA	6	A	K	1	8	7
LCY399	6	A	K	1	8	7
M39ALV	6	A	K	1	8	7
MEX9CX	6	A	K	1	8	7
N34MW9	6	A	K	1	8	7
NEGFCM	6	A	K	1	8	7
NTX3A8	6	A	K	1	8	7
P3HXYP	6	A	K	1	8	7
P6KYZN	6	A	K	1	8	7
PKENTZ	6	A	K	1	8	7
PXL4TW	-----	-----	-----	-----	-----	-----
PYJM4R	6	A	K	1	8	7
QJ67NW	6	A	K	1	8	7
QM4K9Z	6	A	K	1	8	7
QTMHNT	6	A	K	1	8	7
QYX2X2	6	A	K	1	8	7
QZPN3V	6	A	K	1	8	7
R2YTFJ	6	A	K	1	8	7
R48EFZ	6	A	K	1	8	7
RA9QCX	6	A	K	1	8	7

TABLE 1

WebCode	Character 1	Character 2	Character 3	Character 4	Character 5	Character 6
RGN2BW	6	A	K	1	8	7
RJYBGV	6	A	K	1	8	7
RP2KL3	6	A	K	1	8	7
T9D3GL	6	A	K	1	8	7
TB4V6W	6	A	K	1	8	7
TPXPPV	6	A	K	1	8	7
TQU9QW	6	A	K	1	8	7
TUCX42	6	A	K	1	8	7
TXVHXP	6	A	K	1	8	7
UG3ADW	6	A	K	1	8	7
UPVHXM	6	A	K	1	8	7
UY2U7X	6	A	K	1	8	7
VQ8GUG	6	A	K	1	8	7
W63Q33	6	A	K	1	8	7
WFYU7W	6	A	K	1	8	7
WHB2HH	6	A	K	1	8	7
WLKEZG	6	A	K	1	8	7
WPPECU	6	A	K	1	8	7
WVRNG2	6	A	K	1	8	7
WW6QCT	6	A	K	1	8	7
X3BLVT	6	A	K	1	8	7
X42DUZ	6	A	K	1	8	7
XA7C6P	6	A	K	1	8	7
XGTYZV	6	A	K	1	8	7

TABLE 1

WebCode	<u>Character 1</u>	<u>Character 2</u>	<u>Character 3</u>	<u>Character 4</u>	<u>Character 5</u>	<u>Character 6</u>
XQKPWG	6	A	K	1	8	7
XZ32YZ	6	A	K	1	8	7
YFTQHG	6	A	K	1	8	7
YLZRUC	6	A	K	1	8	7
YQA6CP	6	A	K	1	8	7
YZGFQM	6	A	K	1	8	7
Z6QT9L	6	A	K	1	8	7
ZVY3EL	6	A	K	1	8	7

Response Summary						Participants: 151
	<u>Character 1</u>	<u>Character 2</u>	<u>Character 3</u>	<u>Character 4</u>	<u>Character 5</u>	<u>Character 6</u>
Consensus	6	A	K	1	8	7
Number	150	150	150	150	149	150
Percent	99.3%	99.3%	99.3%	99.3%	98.7%	99.3%

Conclusions

TABLE 2

WebCode	Conclusions
2DZGLK	The obliterated serial number on the SNR2 bar stock was chemically processed and restored to read: 6AK187.
2LUP7B	The item 1 serial number was restored. The item 1 serial number is 6AK187
32K79E	Using standard laboratory techniques, the obliterated serial number on Item 1 was restored to read "6AK187".
32ZXBQ	Serial number is 6AK187.
3C3QTB	The serial number of the bar stock was restored to read 6AK187.
3CX2EK	Under the TEST NO 16-5251, Item 1 above number (6AK187) was recovered after treatment with our laboratory reagents and methods.
3E8JKN	Chemical etching techniques were utilized on the submitted bar stock sample and the following number was restored: 6 A K 1 8 7.
3LNUZA	The serial number of Item 1 as restored is "6AK187".
3M4L3M	The Number Serial 6AK187 was recovered using the tecnical not destructive and not invasive Magneto-Optica time excusion 9 minutes.
3REWTV	On 8/30/2016 the stainless steel bar stock (Item #1) was physically and chemically processed. Its serial number was restored to read: 6AK187
4NQCCB	Item 1 was physically and microscopically examined. The obliterated area was prepared and chemically processed. The serial number was restored to read 6AK187.
4QJDQU	This area was cleaned, polished and chemically processed in a attempt to restore the obliterated serial number. A serial number of 6AK187 was successfully restored.
4RPVPP	Using standard laboratory restoration techniques, the obliterated serial number on Exhibit #1 was partially restored to readh: 6AK1*7. The fifth digit could either be an 8 or a B. Further attempts to restore the full number were unsuccessul.
4T6HYR	The surface of the stainless steel bar was chemically treated and the following character were revealed: 6AK187
4WZ98N	The obliterated serial number, located on the center of the item, was restored to read "6AK187".
4XFXG9	Opinions and Interpretations: Item #1 (A piece of stainless steel bar stock with suspected obliterated serial number) was examined on 07/22/2016. The obliterated number on Item #1 (bar stock) was recovered as 6AK187 End of Report:
6DMGT7	Restoration of the obliterated serial number was performed on the questioned surface of Item 1, and the restored serial number was found to be "6AK187".
6DR79J	The stamped alphanumeric characters of the piece of stainless stell labeled as "sample pack: SNR2", were recovered totally and are as follows 6AK187.
6JUFDQ	I attempted a serial number restoration on Item 1, by chemical etching, and I recovered the following serial number: 6AK187

TABLE 2

WebCode	Conclusions
6K8H9J	The serial number was restored to read 6AK187. The standard metal bar stock was not examined further.
6RAYWQ	Examination and chemical and magnetic processing restored the obliterated serial number, which was determined to be "6AK187".
6RPQWF	Restoration procedures revealed the serial number to be: 6AK187
6ZYK3N	The obliterated area of Exhibit 1 (Stainless steel bar) was visually examined and chemically processed. The characters were restored and appeared as follows: 6AK187.
7A2JQF	Using standard restoration techniques, the obliterated number on Item 1 was restored to read: 6AK187.
7N4TVP	The serial number in the stainless steel plate, described in the Item 1, was recovered and it consists of:6AK187.
7NKH6A	Examinations and magnetic processing of Item 1 restored the original obliterated serial number which was determined to be "6AK187".
7R44QP	The serial number of the stainless steel bar stock described in item 1, was restored and corresponds to: 6AK187.
84VHE7	The obliterated serial number on item A1-1 was restored and found to be 6-A-K-1-8-7.
88UNKH	After application of the electromagnetic process, we determined the number of the steel bar stock as "6AK187"
8ECW9E	Serial Number Restoration procedures were performed and it was determined that the serial number was restored to read 6AK187.
8FLCPE	The Item 1 serial number was restored to read: 6AK187
8HC6DP	Attempts to restore the obliterated serial number of Item 1 were successful. The restored serial number is 6AK187.
9ATRWH	The serial number on the surface of the stainless block was observed to have been completely obliterated. In an attempt to restore this number, polishing and chemical etching procedures were performed. The following serial number was revealed: "6AK187".
9KFTED	The serial number was restored to read: 6AK187.
9W9KDJ	The serial number of item 1 to read "6AK187"
9XYBA3	Serial # 6AK187 restored through the chemical etching process.
ABJC3E	An examination of the submitted bar stock found the manufacturer's serial number to have been obliterated. Magnetic processing of the submitted bar stock restored the obliterated, original serial number to read "6AK187"
ANC42J	The digits of the number "6AK187" are restored after the electromagnetic method.
APN4XE	[Lab - Item Number] was restored to read 6AK187 after serial number restoration procedures were performed (Acid etch).
AQXL4H	Serial Number Restoration Analysis: Methodology - Chemical Reagent Etching/Microscopy/Physical. Serial number restoration procedures revealed the serial number on Item 1 to be: 6 A K 1 8 7

TABLE 2

WebCode	Conclusions
B2X9VE	The obliterated serial number on the metal bar stock (item 1) was fully restored to "6AK187".
BANU2C	Through a combination of mechanical polishing and chemical etching, the obliterated serial number on item 1 was restored to read 6AK187.
BMRF43	Item #1 (stainless steel bar stock with suspected obliterated serial number) was examined on 7/22/2016 and found to contain an area of obliteration with overlapping circular signatures. Serial Number Restoration was successful. The serial number on Item #1 (bar stock) was recovered as: 6AK187.
BN877E	Item #1 is a piece of metal bar stock said to be stainless steel with an obliterated serial number. Examination and chemical processing of item #1 restored the six characters of "6AK187."
BNMX64	The Exhibit's surface was lightly polished, using grinding paper 600. The polished surface was then treated with Fry's reagent. The restored serial number is 6AK187. The results were successfully photographed
BP3P8F	The serial number of Item 1 was restored to read 6AK187 this conclusion was verified by firearms examiner [Name] y [Name]
BUBLZ9	Examination and processing of the Q-1 bar stock (Item 1) restored the original obliterated serial number, which was determined to be 6AK187.
BZ6HPZ	Serial number obliterated by abrasion. Restored by examiner using chemical etching process to "6AK187".
C2RDPD	The serial number on Item 1 was restored and reads: 6 A K 1 8 7
C6QRC4	Using standard laboratory restoration techniques, the obliterated serial number on item 1 was restored to read: 6AK187.
CCR49Z	The obliterated serial number on the stainless steel bar, item 1, was restored to read "6AK187".
CEBQUF	The serial number of the stainless steel bar stock described in item 1, was restored and corresponds to: 6AK187.
CFRMLE	The obliterated number on the Item 1 piece of metal was restored to read "6AK187"
CK3Z4D	The examination and chemical processing of the aluminum bar, Item # 1, revealed a full serial number with sufficient characteristics to allow the examiner to make a positive identification. The numbers / letters recovered are as follows, "6AK187".
CKHPEY	Submitted in small tan envelope marked "Test No. 16-5251 Item 1": One (1) rectangular in shape, piece of aluminum bar stock, measuring approx. 1" x 2 3/4" x 1/4" and weighing approx 1.356 grms. Serial number defaced by Circular Abrasions. Serial number restored using Chemical Etching Process. Serial Number reads: 6AK187.
CN2CYD	The examination and chemical processing of item #1: aluminum bar, revealed a full serial number with sufficient characteristics to allow the Examiner to make a positive identification. The serial number recovered is as followed, "6AK187".
D2MGT9	The serial number was restored as: 6AK187.
D6896B	The serial number was restored to read 6AK187 The standard aluminum bar stock was not examined further.

TABLE 2

WebCode	Conclusions
DDFZ9E	Methodology - Chemical Reagent Etching/Microcopy/Physical. Serial number restoration procedures revealed the serial number on Item 1, the bar stock, to be: 6 A K 1 8 7
DQ9Q7J	Results of Examinations: Examination and processing of the obliterated serial number on the submitted plate restored the serial number to read "6AK187". Methods: Magnetic, thermal and chemical methods may be used for the restoration of serial numbers. Conclusions regarding restored characters are made by visual examination of the restored surface under a variety of lighting conditions. Information regarding the alpha-numeric structure or the general location of serial numbers is obtained when necessary from reference sources or from firearms in the Laboratory's Reference Firearms Collection. Limitations: With the exception of the magnetic method, serial number restoration is a destructive examination and it is possible that the obtained results may not be reproduced in any subsequent examinations. Restored serial numbers are sometimes only visible during a portion of the reconstruction process, and are not necessarily visible at the conclusion of the process.
E2K93Z	Item: 1 One piece of stainless steel bar stock with suspected obliterated serial number. RESULTS: Item 1 was physically and microscopically examined. The serial number area of Item 1 was prepared and treated with a chemical reagent. As a result of these actions, the serial number was restored to read 6 A K 1 8 7. Test specimens from Item 1 were not entered into the Integrated Ballistics Identification System (IBIS) as they did not meet the current criteria for entry.
EEADLD	The serial number on item #1 was restored to read "6AK187."
ENW7K9	The serial number was restored to read: 6AK187
EQ4WZJ	Item 1's obliterated serial number was chemically restored and found to be "6AK187".
ETRZHA	The Exhibit #1 serial number was restored and found to be: 6AK187. Exhibit #2 was not examined.
EVBRTC	The serial number on the aluminium plate (Item 1) had been erased using a milling process. I restored this serial number using a chemical etchant technique. The number read 6AK187.
F6EWAE	The serial number was restored and the digits were observed as 6AK187.
FKBCA9	Serial number restoration procedures were performed and it was determined that the serial number was 6AK187.
FTZWF7	Serial number procedures were performed and the serial number was restored to read 6AK187.
GEZQ9A	A sample of rectangular metal was treated with a solution of Fry's reagent. During the treatment process a series of alpha numeric characters were recovered. These were recorded as 6AK187. The characters recovered were consistent with the font to that of the sample piece.
GHH83Y	Examination and chemical processing restored the original obliterated serial number on Item 1 to read: "6AK187".
GQ9T9X	After the application of the acid etch serial number restoration method the serial number on Item 1 was perceived as "6AK187".
H6PF8G	ITEM # 1 WAS CHEMICALLY PROCESSED. SERIAL NUMBER RESTORED TO READ 6AK187.
H8XZ4A	Using the acid-etch method, the serial number on the piece of gray metal with obliterated area (0001-AA, Item 1) was completely restored to read, "6AK187". No examinations were conducted with the piece of gray metal with stamped characters (0001-AB, item not listed on submission form).
HAJ3M3	After using Ferric Chloride and Acidic Ferric Chloride, the chemicals revealed "6AK187".

TABLE 2

WebCode	Conclusions
HAJDW8	After application of the electro-magnetic process, We determined the serial number of the stainless steel bar stock as 6AK187.
HHCDWY	Using standard laboratory restoration techniques, the obliterated serial number on Item 1 was restored to read 6 A K 1 8 7.
HM4KF8	Serial Number Restoration Analysis: Methodology - Chemical Etching/Microscopy/Physical. Serial number restoration procedures revealed the serial number of Item 1, the bar stock to be: 6 A K 1 8 7.
HM6GQ3	Examination of the submitted aluminum bar stock found the manufacturer's serial number to have been obliterated. Physical and chemical processing of the submitted bar stock restored the obliterated, original serial number to read "6AK187".
HNZZR4	Visual examination of this item revealed the presence of polish marks on one side. This area was etched with acid solutions and the following was restored: (6)(A)(K)1 8 7 () indicates a possible character due to an incomplete restoration.
HWEL3T	Serial number of 6AK187 restored using chemical etching solution.
HXQLX3	The obliterated serial number of evidence item 1 was chemically restored with the following results obtained. The restored serial number is 6AK187.
J2MWK9	Through the chemical process it was determined that: 1. The serial number on the stainless steel bar stock, described in Item 1, was restored and corresponds to: 6AK187.
J3YTPD	The serial number has been restored successfully and appeared clearly and entirely.
JBU8ZR	Chemical etching method was used and the following characters were recovered " 6AK187"
JM8YE9	Item #1 is a piece of stainless steel bar stock with suspected defaced serial number. The area was magnetically processed and serial number was restored read 6AK187.
JNH7QU	Using standard laboratory techniques, the obliterated serial number was restored to read: 6AK187.
K4RGU8	Serial Number Restoration Analysis: Methodology - Chemical Reagent Etching/Microscopy/Physical. Serial number restoration procedures revealed the serial number on Item 1, to be: 6 A K 1 8 7
K8A78C	The defaced stainless steel bar (Item 1) was physically/ chemically processed. Its serial number was restored to read: 6AK187.
KAE8G3	The submitted specimen marked Item 1 was examined and identified as a stainless steel bar stock with a suspected obliterated serial number. As a result of examination and chemical processing, it was concluded that the obliterated serial number was restored to read "6AK187."
KB9KU2	Serial number procedures were performed and the serial number was restored to read 6AK187.
KDBH39	The piece of stainless steel bar was initially examined when no serial number was visualised. The ground area of the bar was subsequently treated with a chemical etching solution after which the serial number "6AK187" was visualised.
KKBBKW	The obliterated serial number on the Item 1 piece of steel was restored using standard laboratory techniques and was determined to be: 6AK187
KLQ2M9	Sample under test made from steel with the following dimensions (7cmx2.5cm). Numbers area dimensions (2.5cmx2.5cm). It appears that the numbers area exposed to heavy mechanical erasing lead to hiding and erasing the details of the numbers.

TABLE 2

WebCode	Conclusions
KM2498	The serial number of the stainless steel bar stock described in item 1, was restored and corresponds to: 6AK187.
KZNLB4	Laboratory examination found submission 001-1 to have an obliterated serial number. Chemical restoration revealed the number to be 6AK187.
L2C6H3	The obliterated serial number was electromagnetically processed and was restored to read 6AK187.
L2HQ64	The obliterated serial number on the piece of stainless steel bar stock, item 1, was restored to read "6 A K 1 8 7".
L7NKYY	Examination of the submitted Item 1 found that the manufacturer's serial number to have been obliterated. Physical and magnetic processing of the submitted Item 1 restored the obliterated, original serial number to read "6AK187".
LCULBA	The serial number of the stainless steel bar stock described in item 1, was restored and corresponds to: 6AK187.
LCY399	The serial number had at sometime been erased, however, it was recovered at the laboratory using "Magnaflux", a non-destructive technique, when it was found to be "6AK187".
M39ALV	Examination and processing of the Q-1 (Item #1) bar stock restored the original obliterated serial number, which was determined to be 6AK187.
MEX9CX	The obliterated area on Exhibit 1 (Metal bar) was visually examined. The characters could be seen using oblique lighting under magnification and appeared as follows: 6AK187.
N34MW9	The examination and processing of the obliterated serial number on the Item 1 stainless steel bar stock was restored to read "6AK187".
NEGFCM	Restoration of the obliterated serial number was performed on the questioned surface of the stainless steel bar stock marked "Item 1". The restored serial number was found to have six characters – "6AK187".
NTX3A8	The serial number of the stainless steel bar stock, was restored and corresponds to: 6AK187.
P3HXYR	The obliterated serial number on Item 1 was restored to read "6AK187".
P6KYZN	The obliterated serial number has been restored as written below.
PKENTZ	Restoration by chemical etching revealed the original serial number to be "6AK187".
PXL4TW	Negative result. After using physical and chemical procedures, with the help of suitable reagents, the erased number can not be regenerated.
PYJM4R	The obliterated serial number on Item 1 was restored to read "6AK187".
QJ67NW	It made the restoration procedure serial number, it was obtained highlight of the digits corresponding to 6AK187.
QM4K9Z	Attempts to raise the serial number of the stainless steel bar stock, specimen #1, by chemical methods revealed the following serial number: 6AK187.
QTMHNT	The obliterated serial number on the stainless steel barstock was located on the side of the sample. The area was magnetically processed and it was restored to read "6AK187".

TABLE 2

WebCode	Conclusions
QYX2X2	The serial number of the stainless steel bar, described in the item 1, was restored and corresponds to: 6AK187.
QZPN3V	The submitted specimen marked Item 1 was examined and identified as a piece of stainless steel bar stock with a suspected obliterated serial number. The Exhibit 1 obliterated serial number, located on the piece of stainless steel bar stock, was chemically processed and restored to read "6AK187".
R2YTFJ	An attempt was made to restore the serial number. The following serial number was restored: 6AK187.
R48EFZ	The serial number on Item 1 was restored to read "6AK187".
RA9QCX	The serial number that has been recovered after Fry's treatment is 6AK187.
RGN2BW	Examination of the submitted piece of steel bar stock found the applied serial number to have been obliterated. Physical and magnetic processing of the submitted piece of steel bar stock restored the obliterated, original serial number to read "6AK187".
RJYBGV	Aluminium part of the examinations ; No number has been shown to be scraped . The applied electromagnetic methods which result in numbers " 6AK187 " characters have been determined.
RP2KL3	Examination and chemical processing restored the obliterated serial number, which was determined to be "6AK187".
T9D3GL	One (1) piece of stainless steel (aprox 2 7/8" x 1" x 1/4") submitted with a suspected obliterated serial number. A one inch square area of surface removed by a drilled/cutting device. Serial number "6AK187" restored using chemical etching process, scribed with number "16-5251" by examiner.
TB4V6W	Prepared the surface of item 1 applies nondestructive method of magnaflux and obtain alphanumeric characters 6A K 187
TPXPPV	A serial number restoration was performed on Item 001.A (Item 1) piece of stainless steel bar stock with a suspected obliterated serial number. The serial number was fully restored and appeared to be 6AK187.
TQU9QW	I restored the obliterated serial number to read 6AK187.
TUCX42	Item 1 was received with the serial number obliterated. Attempts to restore the serial number were made by sanding and polishing the surface with a Dremel tool and by acid etching. This attempt yielded the serial number to read, "K25DFK."
TXVHXP	Examination and processing of the Q-1 (Item #1) bar stock restored the original obliterated serial number, which was determined to be 6AK187.
UG3ADW	Forensic restoration methods applied to the heavily ground area of the metal bar stock restored a series of characters that read: 6AK 187
UPVHXM	Using standard laboratory restoration techniques the obliterated serial number on Item 1 was restored to read: 6 A K 1 8 7
UY2U7X	Chemical treatment was successful in chemically restoring a serial number on the bar. The serial number on the bar was restored to read 6 A K 1 8 7.
VQ8GUG	The serial number on item 1 was restored and determined to be 6AK187.
W63Q33	The stainless steel bar stock was physically and chemically processed. Its serial number was restored to read: 6AK187

TABLE 2

WebCode	Conclusions
WFYU7W	On examination, I found that the surface of the stainless bar stock had been filed. No number was observed. On electrochemical treatment, I developed the serial number "6AK187".
WHB2HH	The obliterated serial number on Item 1 was restored to read '6AK187.'
WLKEZG	Serial number was recovered using a chemical etching process.
WPPECU	The obliterated serial number was completely restored and was found to be 6AK187.
WVRNG2	The piece of metal (Item 1) was chemically processed. Its serial number was restored to read [6AK187].
WW6QCT	A series of six previously stamped characters were restored and read: 6AK187.
X3BLVT	The serial number was determined to read: 6 A K 1 8 7
X42DUZ	Examination and chemical processing of Item 1 determined the original obliterated serial number to be 6AK187.
XA7C6P	The Item 1 obliterated serial number, was magnetically processed and restored to read "6AK187".
XGTYZV	The recovered serial number of the plate is 6AK187
XQKPWG	The Item 1 piece of steel was chemically processed in an attempt to restore the obliterated serial number with the following result: The serial number was restored to read 6AK187. The restored serial number was not searched in any databases.
XZ32YZ	The obliterated area on the piece of stainless steel bar stock in item 1 was chemically etched and the serial number was determined to be 6AK187.
YFTQHG	Item: 1 A piece of stainless steel bar stock with suspected obliterated serial number. RESULTS: Item 1 was physically and microscopically examined. The serial number area of Item 1 was prepared and chemically processed with restoration reagents. As a result of these actions, the serial number was restored to read: 6AK187.
YLZRUQ	Item#1 Stainless steel bar stock had been submitted with the serial number obliterated by grinding. Examination and chemical processing of item#1 fully restored the original obliterated serial number to read "6AK187". Results were preserved with clear nail polish.
YQA6CP	The serial number restored by a electromagnetic method on the obliterated portion of stainless steel bar stock (item 1) is 6AK187, in accordance with aluminum standard bar stock.
YZGFQM	The obliterated serial number of the stainless steel bar stock (item 1) was chemically restored and determined to be 6AK187.
Z6QT9L	Examination and restoration of the serial number of Item 1 (a piece of stainless steel bar stock) revealed the following characters: "6AK187".
ZVY3EL	In the examination with "Physical Etching" and "Electromagnetic" methods, it has been determined that the scraped and destroyed characters on "Item 1" consist of "6AK187" letters-numbers

Sample Preparation

(listed in order of use)

TABLE 3

WebCode	Method	Tool Used	Grit Size
2DZGLK	Visual	Stereoscope	N/A
	Polishing	Dremel	Unknown
2LUP7B	Sanding	Sand paper	600
	Polishing	Steel wool	
32K79E	Polishing	Sand paper	150 & 220
32ZXBQ	Visual		
3C3QTB	Polishing	Powered buffer wheel w/polishing compount	none
3CX2EK	Cleaning	Acetone	
3E8JKN	1. Light polishing with cratex wheel	Dremel	
3LNUZA	Sanding	Sand paper	60c
	Sanding	Sand paper	220c
3M4L3M	observation	magnifying glass	
	surface cleaning ≠ 400 y ≠ 600	sanding	
	surface contact magnetize	Mag. View	
3REWTV	Sanding	Sand paper	Medium
4NQCCB	Visual	Microscope	
	Sanding	Sand paper	120, 220, 320, 600, 1200
4QJDQU	Cleaning	Acetone	
4RPVPP	Polishing	Rotary Tool	
4T6HYR	The surface was cleaned with acetone	Cotton swab	
4WZ98N	Polishing	Dremel	
	Polishing	Steel wool	
4XFXG9	Visual		
6DMGT7	Polishing	Sand paper	100-1500
6DR79J	Visual		
	Polishing	Steel wool	
6JUFDQ	Clean with acetone		
	Sanding and polishing	Sand paper	No. 320
6K8H9J	Cleaning	Methanol	

TABLE 3

WebCode	Method	Tool Used	Grit Size
	Polishing	Sand paper	Extra Fine P320 Grit
6RAYWQ	None		
6RPQWF	Polishing	Rotary Tool	
6ZYK3N	None		
7A2JQF	Sanding	Sand paper	150, 220, 600
	Polishing	Dremel	
7N4TVP	Sanding	Sand paper	220
	Sanding	Sand paper	1000
7NKH6A	Polishing	Dremel	
7R44QP	Visual	Stereoscope	N/A
	Cleaning	Acetone	N/A
	Polishing	Sand paper	220
	Polishing	Sand paper	1000
84VHE7	None		
88UNKH	None		
8ECW9E	Polishing	Scouring Pad	N/A
8FLCPE	Grinding	Dremel	
	Polishing	Emery paper	
8HC6DP	Polishing	Dremel	
9ATRWH	Polishing Wheel	Dremel	
9KFTED	Polishing	Dremel	
9W9KDJ	Sanding	Sand paper	800
9XYBA3	Polishing	Dremel	
ABJC3E	None	No tool used.	N/A
ANC42J	Polishing	Dremel	
APN4XE	Sanding	scouring pad	N/A
AQXL4H	Sanding	Dremel	Fine 180
	Polishing		
B2X9VE	Visual	Stereoscope	N/A
	Polishing/Sanding	Emery cloth/buffer wheel	Fine grit/cloth
BANU2C	Visual	Stereoscope	
	Polishing	Dremel	Various
	Sanding	Sand paper	Various to 600
	None		

TABLE 3

WebCode	Method	Tool Used	Grit Size
BMRF43	None		
BN877E	Cleaning	Ethanol	N/A
	Sanding	Dremel	120 grit flapper wheel
	Polishing	Sand paper	600 grit
BNMX64	Polishing	Sand paper	600
BP3P8F	The surface is observed to be treated Polishing method		
BUBLZ9	Polishing	Dremel	
BZ6HPZ	Polishing	Dremel	
C2RDPD	Sanding	Sand paper	Unknown
C6QRC4	Cleaning	soft cloth	
CCR49Z	Visual	Stereoscope	
	Polishing	Dremel	
CEBQUF	Visual	Stereoscope	N/A
	Cleaning	Acetone	N/A
	Polishing	Sand paper	220
	Polishing	Sand paper	500
CFRMLE	Sanding	Dremel	120
	Polishing	Dremel	
CK3Z4D	Polishing	Dremel	
CKHPEY	Polishing	Polishing wheel	
CN2CYD	Visual		
	Polishing	Dremel	
D2MGT9	Polishing	Steel wool	
	Sanding	Sand paper	240
	Polishing	Steel wool	
D6896B	Cleaning	Methanol	
	Sanding	Sand paper	220 grit
DDFZ9E	Sanding	Dremel	240
DQ9Q7J			
E2K93Z	Sanding	Sand paper	320
EEADLD	None	N/A	N/A
ENW7K9	Sanding	Sand paper	220 & 320
EQ4WZJ	Sanding	3M wet or dry	240, 400,600grit

TABLE 3

WebCode	Method	Tool Used	Grit Size
ETRZHA	Visual		
	Visual	Stereoscope	
	Polishing	Dremel	
EVBRTC	Visual	Stereoscope	
	Sanding	Flat file	Fine tooth
	Sanding	Emery paper	400
	Polishing	Rotary Tool	Aprox 800
	Polishing	Emery paper	1500 ultra fine
	Cleaning	Acetone	
F6EWAE	Sanding	Dremel	
	Polishing	Dremel	
FKBCA9	None		
FTZWF7	None		N/A
GEZQ9A	Sanding	Emery paper	400, 800 and 1200
GHH83Y	Dremel w/cratex wheel		
GQ9T9X	Polishing	Dremel	
H6PF8G	Sanding	Sand paper	MEDIUM
H8XZ4A	Polishing	Dremel	
HAI3M3	None		
HAJDW8	1- Visual and microscopic examination 2- Sanding and polishing 3- Cleaned the surface with acetone	Stereomicroscope	
HHCDWY	Polishing	Dremel	
HM4KF8	Sanding	Sand paper	100 grit
HM6GQ3	Polishing	Dremel	
HNZZR4	None		
HWEL3T	Light Polishing	Dremel	
HXQLX3	Polishing	Dremel	
J2MWK9	Cleaning	Acetone	
	Visual	Stereoscope	
	Polishing	Dremel	Rubberized Abrasive Wheel Fine Grit
J3YTPD	Polishing and Fry's reagent	Dremel	1200
JBU8ZR	Polishing	Sand paper	120

TABLE 3

WebCode	Method	Tool Used	Grit Size
JM8YE9	None		
JNH7QU	Grinding Polishing	Table grinding wheel Table polishing wheel	
K4RGU8	Sanding Polishing	Dremel Dremel	Fine 180
K8A78C	Sanding	Sand paper	120
KAE8G3	Polishing	Steel wool	
KB9KU2	Polishing	Scouring pad	No
KDBH39	Sanding	Sand paper	P120
KKBBKW	Visual Polishing	Stereoscope Polishing Wheel	
KLQ2M9	Visual Cleaning	Acetone	
KM2498	Visual Cleaning Polishing Polishing	Stereoscope Acetone Sand paper Sand paper	N/A N/A 500 1000
KZNLB4	Polishing	dremmel	
L2C6H3	Visual and microscopic examination. The surface was cleaned with acetone and polished with fine sandpaper before serial number recovery process.		
L2HQ64	None		
L7NKYY	Sanding	Sand paper	100 - Medium
LCULBA	Visual Cleaning Polishing Polishing	Stereoscope Acetone Sand paper Sand paper	N/A N/A 220 1000
LCY399	Visual	Stereoscope	
M39ALV	Visual Polishing Visual	Ambient Light Dremel Ambient Light	Polishing Wheel 425
MEX9CX	Visual	Stereoscope	
N34MW9	Magnetic/No sanding	Large magnet	NA

TABLE 3

WebCode	Method	Tool Used	Grit Size
	First Attenuatd		
NEGFCM	Polishing	Sand paper	Various grit sizes were used (100, 360, 1500).
NTX3A8	Visual	Stereoscope	N/A
	Cleaning	Acetone	N/A
	Polishing	Sand paper	500
	Polishing	Sand paper	1000
P3HXJR	Polishing	Cratex wheel	N/A
P6KYZN	None		
PKENTZ	Cleaning with organic solvent	Cotton wool	
	Polished	Abrasive paper	400 cw
PXL4TW	Cleaning	Acetone	
	Sanding	Sand paper	100 & 1200
	Cleaning	Acetone	
	Visual	Stereoscope	
PYJM4R	Polishing	Dremel cratex wheel	Unknown
QJ67NW	Cleaning	Acetone	no
QM4K9Z	Visual	Comparison microscope	
	Cleaned	Acetone	
	Sanding	Dremel	120 grit
QTMHNT	None		
QYX2X2	Visual	Stereoscope	N/A
	Cleaning	Acetone	N/A
	Polishing	Sand paper	220
	Polishing	Sand paper	500
	Polishing	Sand paper	1000
QZPN3V	Polishing	Steel wool	N/A
R2YTFJ	Grinding	Dremel	
R48EFZ	N/A		
RA9QCX	Magnaflux	Electromagnetic Yoke	
	Fry's	Polishing tools	
RGN2BW	Polishing	Dremel	
RJYBGV	Sanding	Dremel	1200c
RP2KL3	Polishing	Dremel	
T9D3GL	Polishing	Dremel	Wheel

TABLE 3

WebCode	Method	Tool Used	Grit Size
TB4V6W	Physical and microscopic observation of the surface in item 1 research		
	Mirror polishing surface effect of item 1	Mototool	1200 grit
TPXPPV	Cleaning	Acetone	
	Polishing	Dremel	
TQU9QW	Visual	Stereoscope	n/a
	None	Magnaflux w/o surface prep	n/a
	Sanding	Sand paper	100, 220, and 400
TUCX42	None	Stereoscope	N/A
TXVHXP	None		
UG3ADW	Polishing	Sand paper	1200
UPVHXM	Visual	Stereoscope	400
	Sanding	Sand paper	
UY2U7X	Polishing	Rotary Tool	
	Cleaning	Acetone	
VQ8GUG	Visual	Stereoscope	
	Polishing	Steel wool	
	Polishing	Dremel	
	Polishing	Steel wool	
W63Q33	Sanding	Sand paper	medium
WFYU7W	Cleaning	Acetone	
WHB2HH	Polishing	Dremel	
WLKEZG	Polishing	Grinding wheel.	
WPPECU	Sanding	Dremel	220
	Polishing	Dremel	
WVRNG2	Sanding	Sand paper	medium
WW6QCT	Polishing	Sand paper	1200 wet and dry
X3BLVT	Visual		
X42DUZ	Polishing	Dremel	Cratex (Fine)
XA7C6P	Visual	Stereoscope	
XGTYZV	Visual		
	Sanding	Sand paper	P180
XQKPWG	Sanding	Sand paper	fine emery

TABLE 3

WebCode	Method	Tool Used	Grit Size
XZ32YZ	Visual Polishing	Dremel	polishing wheel #425
YFTQHG	Visual Visual Sanding Sanding	Stereoscope Microscope Sand paper Steel wool	220
YLZRUQ	Visual Sanding Polishing	Steel wool	150
YQA6CP	Sand papered and polished the sample until it was mirror smooth. Mechanical tool was used to prepare and polish the surface. Cleaning was done with acetone.		
YZGFQM	Visual Polishing	Oblique lighting Rotary Tool	Dremel #425 Polishing Wheel
Z6QT9L	Polishing	Dremel	
ZVY3EL	Visual Sanding	photo camera Sand paper	

Response Summary

Participants: 151

Sample Preparation

Visual Method: 38

Sanding Method: 45

Polishing Method: 82

None: 20

Note: The totals are not equivalent to the total number of participants because some participants used more than one sample preparation method.

Recovery Methods

(listed in order of use)

TABLE 4

WebCode	Method	Time
2DZGLK	Fry's Reagent	Approx. 5 min
2LUP7B	Fry's Reagent	various
32K79E	Turner's Reagent	~ 5 minutes
	Fry's Reagent	~ 5 minutes
32ZXBQ	Fry's Reagent	40
	Acid Etch Method	50
	Magnet-optical (with Regula)	
3C3QTB	Fry's Reagent	1-3 minutes
3CX2EK	Turner's Reagent	
3E8JKN	Acid Ferric Chloride	~30 minutes
3LNUZA	Fry's Reagent	2 minutes total
3M4L3M	Applied magnetic field	2 minutes
	Tecnica Magneto optica	7 minutes
3REWTV	Fry's Reagent	Approxamitly 1 to 2 minutes
4NQCCB	Davis Reagent	30 Seconds
	Turner's Reagent	30 Seconds
	Fry's Reagent	5 Minutes
4QJDQU	Acid Etch Method	5 minutes
4RPVPP	Acidic Ferric Chloride	Continual swabbing
4T6HYR	Fry's Reagent	15 mins
4WZ98N	Ferric Chloride	30s
	Ferric Chloride	60s (x2)
	Acidic Ferric Chloride	30s (x4)
	Acidic Ferric Chloride	45s
	Acidic Ferric Chloride	60s (x2)
4XFXG9	MagnaFlux	
6DMGT7	Fry's Reagent	3 seconds each time, for about 8 times
6DR79J	MagnaFlux	
	Magnetic Particle Inspection (MPI)	
	DAVIS REAGENT	3 MINUTES
	Turner's Reagent	3 MINUTES

TABLE 4

WebCode	Method	Time
	Fry's Reagent	10 MINUTES
6JUFdq	Etching with Turner's Reagent	37 minutes
6K8H9J	Acid Etch Method	45-60 Seconds
	Acid Etch Method	60-90 Seconds
	Fry's Reagent	30-60 Seconds
	Fry's Reagent	60-90 Seconds
	Fry's Reagent	60-90 Seconds
	Acid Etch Method	60-90 Seconds
6RAYWQ	Magnetic Particle Inspection (MPI)	
	Polish with dremel	
	Magnetic Particle Inspection (MPI)	
	Davis	2 minutes
	Davis	2 minutes
	Fry's Reagent	2 minutes
	Fry's Reagent	1 minute
6RPQWF	Fry's Reagent	5 minutes
6ZYK3N	MagnaFlux	
7A2JQF	Fry's Reagent	~10 min
7N4TVP	Davis	9 minutes
	Turner's Reagent	6 minutes
	Fry's Reagent	4 minutes
7NKH6A	MagnaFlux	less than 1 minute
7R44QP	Acid Etch Method	Total: 47 minutes
	Ferric Chloride	18 minutes
	Acidic Ferric Chloride	29 minutes
84VHE7	MagnaFlux	
88UNKH	Electro-magnetic	
8ECW9E	Ferric Chloride	3 min.
	Acidic Ferric Chloride	2 min.
8FLCPE	MagnaFlux	
	Fry's Reagent	on and off for 40 minutes
8HC6DP	MagnaFlux	
9ATRWH	Dilute Ferric Chloride	~5 minutes
	Dilute Fry's Reagent	~2 minutes

TABLE 4

WebCode	Method	Time
9KFTED	Fry's Reagent	(X7) - 15 to 20 seconds
	Davis Reagent	(X4) - 15 to 20 seconds
	25% Nitric Acid	(X4) - 15 to 20 seconds
	10% Sodium Hydroxide	(X4) - 15 to 20 seconds
9W9KDJ	Acid Etch Method	10-15 minutes
9XYBA3	Chemical etching	Approx 3-5 minutes at various intervals
ABJC3E	MagnaFlux	N/A
ANC42J	Electro-magnetic	Tiede
APN4XE	Ferric Acid	2-3 min
	Acidic Ferric Chloride	5-8 min
AQXL4H	Visual	N/A
	Sanding	N/A
	Davis Reagent	~1 min
	Fry's Reagent	~45 sec.
B2X9VE	Magnetic Particle Inspection	NA
	Fry's RGT	Approx 1 minute
BANU2C	Fry's Reagent	1-2 minutes at a time, 20 minutes final application.
BMRF43	MagnaFlux	
BN877E	Acidic Ferric Chloride	3 minutes
	Acidic Ferric Chloride	7 minutes
	Acidic Ferric Chloride	wiped with swab repeatedly
BNMX64	Fry's Reagent	
BP3P8F	Method of processing non-destructive "Magna-Flux"	Five (5) Minutes
BUBLZ9	Magnetic Particle Inspection (MPI)	
BZ6HPZ	Sodium Hydroxide 10%	2-3 mins
	Nitric Acid 25%	2-3 mins
	Acidic Ferric Chloride	1 min
	Nitric Acid 25%	1 min
C2RDPD	Turner's Reagent	approx. 10 mins
	Davis' Reagent	approx. 10 mins
	Phosphoric/Nitric acid	approx. 10 mins
	Ferric Chloride	approx. 10 mins
	Acidic Ferric Chloride	approx. 10 mins

TABLE 4

WebCode	Method	Time
	Ferric Chloride in conc. Hydrochloric Acid	(approx. 10 mins) x 2
	Fry's Reagent	(approx. 5 mins) x 2
C6QRC4	MagnaFlux	
CCR49Z	Acid Etch Method	15 minutes
	Fry's Reagent	10 minutes
CEBQUF	Acid Etch Method	Total: 21 minutes
	Ferric Chloride	6 minutes
	Acidic Ferric Chloride	15 minutes
CFRMLE	Davis	1 minute
	Turner's Reagent	1 minute
	Fry's Reagent	10 minutes
CK3Z4D	Acidic Ferric Chloride	up to 1 minute (multiple times)
CKHPEY	Chemical Etching	5 seconds each
CN2CYD	Ferric Chloride	30 sec- 1 min
	Acidic Ferric Chloride	30 sec- 1 min
	Phosphoric Acid	30 sec- 1 min
	Sodium Hydroxide	30 sec- 1 min
D2MGT9	Fry's Reagent	1 minute
	Nitric Acid	5 seconds
	Fry's Reagent	5seconds
D6896B	Acid Etch Method	45 sec to 90 sec
	Acid Etch Method	45 sec to 90 sec
	Acid Etch Method	45 sec to 90 sec
	Acid Etch Method	45 sec to 90 sec
DDFZ9E	Davis Reagent	~10 mins
	Turner's Reagent	~10 mins
	Fry's Reagent	~5 mins
DQ9Q7J		
E2K93Z	Fry's Reagent	approximately 10 minutes
EEADLD	MagnaFlux	5 seconds
ENW7K9	MagnaFlux	10 minutes
	Nitric Acid	30 minutes
	Fry's Reagent	30 seconds
EQ4WZJ	Fry's Reagent	15 minutes

TABLE 4

WebCode	Method	Time
ETRZHA	Fry's Reagent	~10 minutes
	Turner's Reagent	~10 minutes
EVBRTC	Fry's Reagent	Approx 15 minutes total checked at 1 minute intervals
F6EWAE	MagnaFlux	
FKBCA9	Ferric Chloride	2 mins
	Acidic Ferric Chloride	2 mins
FTZWF7	Acid Etch Method	Acidic Ferric Chloride
GEZQ9A	Fry's Reagent	17 minutes
GHH83Y	Acidic Ferric Chloride	~20 mins
GQ9T9X	Fry's Reagent	Approx. 3 minutes
H6PF8G	Fry's Reagent	1 MIN
H8XZ4A	Ferric Chloride	1 minute
	Acidic Ferric Chloride	1 minute 45 seconds
	25% Nitric Acid	2 minutes
	50% Hydrochloric Acid	13 minutes 30 seconds
	Turner's Reagent	4 minutes 30 seconds
	25% Nitric Acid	7 minutes 30 seconds
	50% Hydrochloric Acid	2 minutes
HAJ3M3	Ferric Chloride	Seconds
	Acidic Ferric Chloride	Seconds
HAJDW8	Magnetic Method "Magnaflux"	four minutes
HHCDWY	MagnaFlux	
HM4KF8	Davis	1 min
	Fry's	1 min
	-Alternating between the two (2) for a duration of twenty minutes.	total time 20 minutes.
HM6GQ3	Fry's Reagent	3 minutes
HNZZR4	Acidic Ferric Chloride	~20 minutes
	Hydrochloric Acid	~10 minutes
	Nitric Acid	~10 minutes
HWEL3T	Acidic Ferric Solution	15 to 30 sec
	25% Nitric Solution	15 to 30 sec
HXQLX3	Fry's Reagent	approx. 2 minutes

TABLE 4

WebCode	Method	Time
J2MWK9	Davis Reagent	9 minutes
	Turner's Reagent	5 minutes
	Fry's Reagent	10 minutes
J3YTPD	Fry's reagent	75'
JBU8ZR	Fry's Reagent	1 minute
	Acidic Ferric Chloride	2 minutes
	Ferric Chloride	1 minute
JM8YE9	Magnetic Particle Inspection (MPI) MagnaFlux	
JNH7QU	Fry's Reagent	approx 35 total minutes in intervals
	Nitric Acid 10%	just a few minutes
K4RGU8	Visual	
	Sanding	
	Davis Reagent	~45 seconds
	Fry's Reagent	~30 seconds
	Fry's Reagent	~1 1/2 mins
K8A78C	Fry's Reagent	5 min
KAE8G3	Ferric Chloride	less than 2 minutes
	Acidic Ferric Chloride	less than 2 minutes
KB9KU2	Acid Etch Method	Acidic Ferric Chloride
KDBH39	Fry's Reagent	Applied approximately every 15-20 mins over a period of 135 minutes
KKBBKW	Fry's Reagent	Less than 1 minute
KLQ2M9	Acid Etch Method	1 min
	Fry's Reagent	1 min
KM2498	Acid Etch Method	Total: 17 minutes
	Ferric Chloride	8 minutes
	Acidic Ferric Chloride	9 minutes
KZNLB4	Ferric Chloride	~30 minutes
L2C6H3	Electro-magnetic process "Magnaflux"	3 minutes
L2HQ64	MagnaFlux	
L7NKYY	MagnaFlux	N/A
LCULBA	Acid Etch Method	Total: 45 minutes
	Ferric Chloride	19 minutes

TABLE 4

WebCode	Method	Time
	Acidic Ferric Chloride	26 minutes
LCY399	MagnaFlux	
M39ALV	Magnetic Particle Inspection (MPI)	
MEX9CX	Oblique lighting	
N34MW9	MagnaFlux	NA
NEGFCM	Fry's Reagent	4 times, 10 s each time
NTX3A8	Acid Etch Method	Total: 0:36:48
	Ferric Chloride	0:08:07
	Acidic Ferric Chloride	0:28:41
P3HXZR	MagnaFlux	N/A
	Acidic Ferric Chloride	15 minutes.
P6KYZN	magnetic scattering method	
PKENTZ	Chemical etching by Fry's Reagent	2 mins.
PXL4TW	NaOH 20%	6 min, aprox. (in total)
	NO3H 8N	3 min, aprox. (in total)
	HCl 23%	3 min, aprox.
PYJM4R	Ferric Chloride	10 mins
	Polish	2 mins
	Acidic Ferric	10 mins
	MagnaFlux	5 mins
	Acetic Ferric	10 mins
QJ67NW	MagnaFlux	
QM4K9Z	Ferric Chloride	15 seconds
	Acidic Ferric Chloride	30 seconds
	Phosphoric/Nitric Acid	2 minutes
	25% Nitric Acid	1 minute
	Acidic Ferric Chloride	1 minute
	Phosphoric Nitric Acid	1 minute
	25% Nitric Acid	30 seconds
QTMHNT	MagnaFlux	
QYX2X2	Acid Etch Method	Total 0:36:03
	Ferric Chloride	0:16:02
	Acidic Ferric Chloride	0:20:01
QZPN3V	Ferric Chloride	1-2 minutes

TABLE 4

WebCode	Method	Time
	Acidic Ferric Chloride	1-2 minutes
R2YTFJ	Fry's Reagent	Used a cotton swab and wiped area.
R48EFZ	MagnaFlux	
RA9QCX	MagnaFlux Fry's	10 minutes
RGN2BW	MagnaFlux	
RJYBGV	Electro-magnetic	
RP2KL3	Davis	10 seconds
	Fry's Reagent	10 seconds
	Fry's Reagent	10 seconds
	Fry's Reagent	10 seconds
	Davis	30 seconds
	Fry's Reagent	10 seconds
	Fry's Reagent	10 seconds
	Davis	30 seconds
	Turner's Reagent	5 seconds
	Davis	30 seconds
T9D3GL	Davis Reagent	3 min
	Turner's Reagent	3 min
	Fry's Reagent	1 min
TB4V6W	Revealed to the non-destructive method or magnetic (Magnaflux)	15 minutes
TPXPPV	Davis Reagent	1 minute
	Turner's Reagent	3.5 minutes
	Turner's Reagent	5 minutes
TQU9QW	MagnaFlux	n/a
TUCX42	FERRIC CHLORIDE	1 MINUTE
	10% NITRIC ACID	1 MINUTE
	Acidic Ferric Chloride	1 MINUTE
	Dremel Tool polishing	1 MINUTE
TXVHXP	Magnetic Particle Inspection (MPI)	
UG3ADW	Positest for type of metal m7-v1	
	Prep surface m1-v1 Clean	
	Cast surface m2-v1	
	m1-v1 polish surface	1200 grit

TABLE 4

WebCode	Method	Time
	Fry's Reagent Clear coat paint to protect restoration	Swabbing with chemical approx 1hr
UPVHXM	MagnaFlux Fry's Reagent	most digits came up in a few seconds on and off for two hours
UY2U7X	Fry's Reagent	2-3 minutes
VQ8GUG	Fry's Reagent	.75 hours
W63Q33	Fry's Reagent	45 seconds
WFYU7W	Acid Etch Method	15 minute
WHB2HH	Fry's Reagent	3 minutes
WLKEZG	Acidic Ferric Chloride Ferric Chloride 25% Nitric Acid	Two mins. Two mins. Two mins.
WPPECU	Acid Etch Method	30 minutes
WVRNG2	Fry's Reagent	approximately 2 minutes
WW6QCT	Fry's Reagent Electro-acid	up to 1 hour in total
X3BLVT	MagnaFlux Magnetic Particle Inspection (MPI)	
X42DUZ	Griffin Reagent	4 minutes
XA7C6P	Magnetic Particle Inspection (MPI)	
XGTYZV	MagnaFlux Acid Etch Method	i min
XQKPWG	Fry's Reagent	5 mins
XZ32YZ	Fry's Reagent	Three (3) applications ~ 2 minutes each time
YFTQHG	Fry's Reagent Turner's Reagent	~1 min 30 seconds
YLZRUQ	Acidic Ferric Chloride Nitric Acid Fry's Reagent Turner's Reagent	10 min 2 min 10 min 2 min
YQA6CP	Magnetic Particle Inspection	4 minutes
YZGFQM	10% Sodium Hydroxide	

TABLE 4

WebCode	Method	Time
	25% Sodium Hydroxide Ferric Chloride Acidic Ferric Chloride	applied with a swab
Z6QT9L	Fry's Reagent	
ZVY3EL	Electro-magnetic	back ground dye(white), Mangnetpuluer suspension and Electromagnetic devices

Response Summary		Participants: 151
Recovery Methods		
Chemical Processing:	112	
Magnetic Processing:	47	
Note: The totals are not equivalent to the total number of participants because some participants used more than one recovery method.		

Additional Comments

TABLE 5

WebCode	Additional Comments
3M4L3M	Documents results with photography and digital video
7R44QP	I made a visual inspection and determined the restored characters. After that I used Saturated Sodium Bicarbonate solution to neutralize the bar stock from the chemical solutions.
BNMX64	The polished surface was treated with Fry's reagent for about 15 minutes. The sample was cleaned with acetone.
BP3P8F	When the result is negative with the magnetic method "Magna Flux" the chemical method Fry's be held
C6QRC4	I applied Magnaflux and placed Item 1 in a magnetic field.
CEBQUF	I made a visual inspection and determined the restored characters. After that I used sodium bicarbonate to neutralize the bar stock.
CK3Z4D	Photographs taken before, during and after process
CN2CYD	The steps used during chemical process was repeated multiple times. Photographs were also taken throughout the process.
GEZQ9A	Area sanded to a mirror finish. Characters started to appear after 10 minutes of application of Frys.
GQ9T9X	First applied Fry's reagent till serial number vaguely visible. Wiped off acid and used Dremel tool for light polishing. Serial number appeared with better clarity.
HAJDW8	Document results with photography,
JM8YE9	A horseshoe magnet was utilized during restoration.
KM2498	I made visual inspection and determined the restored characters. After that I used Sodium Bicarbonate to neutralize the bar stock.
L2HQ64	There is a shallow machined groove on item 1. The number was restored using Magnaflux 7HF bath.
LCULBA	Finally, I made a visual inspection and determined the restored characters. Then I used Sodium Bicarbonate to neutralize the stainless steel bar stock.
MEX9CX	No actual restoration was necessary as I could easily read the numbers under magnification with oblique lighting.
N34MW9	Methods: Serial Number: Magnetic, thermal and chemical methods may be used for the restoration of serial numbers. Conclusions regarding restored characters are made by visual examination of the restored surface under a variety of lighting conditions. Information regarding the alpha-numeric structure or the general location of serial numbers is obtained when necessary from reference sources or from firearms in the Laboratory's Reference Firearms Collection.
NTX3A8	I made a visual inspection of the bar stock and restored the serial number characters. After finishing with the restoration, I used a saturated sodium bicarbonate solution to neutralize the

TABLE 5

WebCode	Additional Comments
	bar stock.
PXL4TW	Negative result. Material subtraction by milling.
QJ67NW	surface cleaning was performed using acetone in order to remove grease and oils
QM4K9Z	Recovery methods were done multiple times until serial number became visible.
QYX2X2	I performed a visual inspection of the stainless steel bar and restored the serial number. I used a saturated solution of sodium bicarbonate to neutralize the bar stock.
TB4V6W	The results obtained are set by digital photography. The characters of the result obtained are very similar in size and morphology to the printed samples of test N°.16-5251 (aluminum standard)
UPVHXM	Using MagnaFlux all but two digits were readably visible very quickly. Adding Fry's reagent took several hours to show other digits more clearly. But all digits were still visible and were easily photographed.
WW6QCT	The milled area and ends of the bar stock had extremely sharp edges and burrs causing a safety hazard.
YQA6CP	A good positive result was obtained during the first attempt and therefore only the electromagnetic process was applied.

Appendix: Data Sheet

Collaborative Testing Services ~ Forensic Testing Program

Test No. 16-5251: Serial Number Restoration

DATA MUST BE RECEIVED BY September 12, 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 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 or A2LA.

Please Note: A piece of aluminum bar stock labeled as "Aluminum Standard" was also included in the sample set and is intended as a reference for size, shape and positioning of the stamped alphanumeric characters used in the serial number.

Items Submitted (Sample Pack SNR2):

Item 1: A piece of stainless steel bar stock with suspected obliterated serial number.

1.) Please record the restored characters below.

The serial number on this material consists of 6 characters.

Item 1: _____

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

Please return all pages of this data sheet.

Participant Code:

WebCode:

Additional Testing Information

**3.) What methods were used to prepare the sample prior to attempts at recovery?
e.g. Sanding, Polishing, Visual, etc. (Please describe in order.)**

Method	Tool used	If sanding was done what grit size was used?
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

**4.) What recovery methods were used during your examination?
e.g. Fry's, Acid Etch, MagnaFlux, etc. (Please list in order of use)**

Method	If an acidic method was used how long was the acid left on the material?
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Please return all pages of this data sheet.

Participant Code:

WebCode:

5.) Additional Comments

Return Instructions: Data must be received via online data entry, fax (please include a cover sheet), or mail by *September 12, 2016* to be included in the report. Emailed data sheets are not accepted.

QUESTIONS?

TEL: +1-571-434-1925 (8 am - 4:30 pm EST)
 EMAIL: forensics@cts-interlab.com
www.ctsforensics.com

Participant Code:

ONLINE DATA ENTRY: www.cts-portal.com

FAX: +1-571-434-1937

MAIL: Collaborative Testing Services, Inc.
 P.O. Box 650820
 Sterling, VA 20165-0820 USA

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. **16-5251: Serial Number Restoration**

This release page must be completed and received by **September 12, 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) _____

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.

Accreditation Release

*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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