



Serial Number Restoration Test No. 18-5251 Summary Report

This test was sent to 212 participants. Each participant received a sample pack containing a piece of 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 171 participants and are compiled into the following tables:

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

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

Manufacturer's Information

Each sample set consisted of a piece of 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 (7E24AN).

SAMPLE PREPARATION:

Each sample set contained a piece of steel bar stock that was stamped with 6 characters (7E24AN). The serial number was then obliterated by a milling machine.

A piece of aluminum bar stock was also included in the sample as a reference standard. The alphanumeric characters provided are digits 0-9 and letters A-F, H, J, K and N.

SAMPLE SET ASSEMBLY:

An Item 1 bar stock was enclosed in chip board and the sides taped to securely contain the sample. The aluminum standard was enclosed 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:

Two of the three predistribution laboratories restored the obliterated six character serial number and reported "7E24AN". The remaining predistribution laboratory restored four of the six characters and reported "75**AN". For recovery of the characters, one laboratory used a magnetic restoration method, one laboratory used a chemical restoration method and one laboratory used both magnetic and chemical restoration methods.

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 (7E24AN). (Refer to Manufacturer's Information for preparation details.)

Of the 171 responding participants in Table 1: "Recovered Characters", 153 (89%) restored the six characters consistent with the Manufacturer's Information. Twelve participants restored five of the six characters, one participant restored four of the six characters, one participant restored three of the six characters and four participants did not restore any of the six characters. It was noted that all 18 participants had difficulty restoring the second character.

In Table 3: "Sample Preparation", the majority of participants used polishing, sanding or visual methods to prepare their sample. In Table 4: "Recovery Methods", the majority of participants used chemical processing for the serial number restoration. However, it was noted that there were laboratories that used both chemical and magnetic restoration methods.

Recovered Characters

Please record the restored characters below.

TABLE 1

Recovered Characters						
WebCode	Character 1	Character 2	Character 3	Character 4	Character 5	Character 6
2C7XJZ	7	E	2	4	A	N
2EUET9	7	E	2	4	A	N
2HVMXH	7	E	2	4	A	N
2M7KJJ	7	E	2	4	A	N
2PXP7P	7	E	2	4	A	N
2ZECFQ	7	E	2	4	A	N
392RHY	7	E	2	4	A	N
3J7NHW	7	E	2	4	A	N
3PTCEM	7	E	2	4	A	N
3Q3QDF	7	E	2	4	A	N
44LLDD	7	E	2	4	A	N
496EV8	7	E	2	4	A	N
49XF8N	7	-	2	4	A	N
4A8MAG	7	E	2	4	A	N
642947	7	E	2	4	A	N
6CJDL7	7	E	2	4	A	N
6JWNAR	7	E	2	4	A	N
6L7EYV	-	-	-	-	-	-
78JNFJ	7	E	2	4	A	N
79VLMA	7	E	2	4	A	N
7KPRNK	7	*	2	4	A	N
7V7GL4	7	?	2	4	A	N
7Y9HNM	7	E	2	4	A	N
86DGWQ	7	*	2	4	A	N
8HQZYQ	7	E	2	4	A	N
8QVN9K	7	E	2	4	A	N

TABLE 1

Recovered Characters						
WebCode	Character 1	Character 2	Character 3	Character 4	Character 5	Character 6
8VK7HP	7	E	2	4	A	N
8WV6JQ	7	E	2	4	A	N
8X7AUT	7	E	2	4	A	N
94T9V2	7	E	2	4	A	N
9CLLTF	7	E	2	4	A	N
9JMQTC	7	E	2	4	A	N
9KHAXY	7	E	2	4	A	N
9LTAXZ	7	E	2	4	A	N
9MHPXA	7	E	2	4	A	N
9RKGG9	7	?	2	4	A	N
AAPMU9	7	8	2	4	4	N
AGXUNJ	7	E	2	4	A	N
AH8RC9	7	E	2	4	A	N
AQFL4F	7	E	2	4	A	N
AYXPJV	7	E	2	4	A	N
AYZFNR	7	E	2	4	A	N
B4K9NW	7	E	2	4	A	N
B6VYYM	7	E	2	4	A	N
B8HPX7	7	E	2	4	A	N
BGR38M	7	E	2	4	A	N
BJTZQ3	7	E	2	4	A	N
BKA8X6	7	E	2	4	A	N
BMYF6K	7	E	2	4	A	N
BN6ZTK	7	E	2	4	A	N
BTL7RF	7	E	2	4	A	N
BYQX6K	7	E	2	4	A	N
C4GWQT	7	E	2	4	A	N
C4HLYW	7	E	2	4	A	N

TABLE 1

Recovered Characters						
WebCode	Character 1	Character 2	Character 3	Character 4	Character 5	Character 6
C8ZQQZ	7	E	2	4	A	N
CAKV6P	7	E	2	4	A	N
CGMWD7	7	E	2	4	A	N
CMVB8M	7	E	2	4	A	N
CN6DXT	7	E	2	4	A	N
D292JV	7		2	4	A	N
D7KY6W	7	E	2	4	A	N
DAGKUD	7	E	2	4	A	N
DED68A	7	E	2	4	A	N
DJP67M	7	E	2	4	A	N
DMR2VG	7	E	2	4	A	N
DQ7LWB	7	*	2	4	A	N
EGJ3ZH	7	E	2	4	A	N
EK28PZ	7	E	2	4	A	N
EZURDF	7	E	2	4	A	N
FB7GNQ	-	-	-	-	-	-
FFX337	7	E	2	4	A	N
FG9U2E	7	E	2	4	A	N
FGCC9Q	7	E	2	4	A	N
FL94CG	7	E	2	4	A	N
FQXKN7	7	E	2	4	A	N
FZAKHH	7	E	2	4	A	N
FZN2GG	7	E	2	4	A	N
FZP2DB	7	*	*	4	A	*
GBL6G6	7	E	2	4	A	N
GJWNHF	7	E	2	4	A	N
GP33KK	7	E	2	4	A	N
GTHXPX	7	E	2	4	A	N

TABLE 1

Recovered Characters						
WebCode	Character 1	Character 2	Character 3	Character 4	Character 5	Character 6
H2WVET	7	E	2	4	A	N
H8XCJ8	7	E	2	4	A	N
HC9A49	7	E	2	4	A	N
HP2HGG	7	E	2	4	A	N
HUR7HG	7	E	2	4	A	N
HXBB6H	7	E	2	4	A	N
J3G8KC	7	E	2	4	A	N
JHZMVN	7	E	2	4	A	N
JMNAMM	7	E	2	4	A	N
JPG9WF	7	E	2	4	A	N
JRNN8R	7	E	2	4	A	N
K7CF4C	7	E	2	4	A	N
K7YNDG	7	E	2	4	A	N
KC7EKT	7	E	2	4	A	N
KCLKXX	7	E	2	4	A	N
KRGT4C	7	E	2	4	A	N
KTPBX2	7	E	2	4	A	N
KW6MRW	7	E	2	4	A	N
L9G698	7	E	2	4	A	N
LEMWEJ	7	E	2	4	A	N
LQ6JNK	7	E	2	4	A	N
LRENZM	7	E	2	4	A	N
LUK4E7	7	E	2	4	A	N
ME2KEP	7		2	4	A	N
MEKTZY	7	E	2	4	A	N
MXEEVX	7	?	2	4	A	N
MX7VA	7	E	2	4	A	N
N42EVB	7	E	2	4	A	N

TABLE 1

Recovered Characters						
WebCode	Character 1	Character 2	Character 3	Character 4	Character 5	Character 6
NK8WPF	7	E	2	4	A	N
NMXXV4	7	E	2	4	A	N
NQ9ZPM	7	E	2	4	A	N
NZD3W6	7	E	2	4	A	N
P4ECJT	7	E	2	4	A	N
P4YY7G	7	E	2	4	A	N
P6MP2U	7	E	2	4	A	N
P76KW3	7	E	2	4	A	N
PED4BR	?	?	?	?	?	?
PM4TML	7	E	2	4	A	N
QFLVGE	7	E	2	4	A	N
QM9GT7	7	E	2	4	A	N
QYXH3L	7	E	2	4	A	N
R243QL	7	E	2	4	A	N
R6JUJE	7	E	2	4	A	N
RAVR3F	7	E	2	4	A	N
RGWRQP	7	?	2	4	A	N
RJXABX	7	*	2	4	A	N
RLN2VG	7	E	2	4	A	N
RMZY47	7	E	2	4	A	N
T23MY8	7	E	2	4	A	N
TEQPHY	7	E	2	4	A	N
TFJMP7	7	E	2	4	A	N
TWXBNY	7	E	2	4	A	N
U2NZLH	7	E	2	4	A	N
UFEKGD	7	E	2	4	A	N
UQTMVX	7	E	2	4	A	N
UT2RED	7	E	2	4	A	N

TABLE 1

Recovered Characters						
WebCode	Character 1	Character 2	Character 3	Character 4	Character 5	Character 6
UYNKL8	7	E	2	4	A	N
VC3GUE	7	E	2	4	A	N
VC748L	7	E	2	4	A	N
VEDCHR	7	E	2	4	A	N
VMULE2	7	E	2	4	A	N
W4PTLY	7	E	2	4	A	N
W66Y3A	7	E	2	4	A	N
W88XCG						
W9QJ9D	7	E	2	4	A	N
WB97FQ	7	E	2	4	A	N
WFJ42T	7	E	2	4	A	N
WQ4JYT	7	E	2	4	A	N
WVHUCW	7	E	2	4	A	N
WYFKE3	7	E	2	4	A	N
X896ZU	7	E	2	4	A	N
X8Q4B8	7	E	2	4	A	N
XCGDJJ	7	E	2	4	A	N
XFMTX3	7	E	2	4	A	N
XJ62FB	7	E	2	4	A	N
XJECME	7	E	2	4	A	N
XPR46R	7	E	2	4	A	N
XQKQTP	7	E	2	4	A	N
Y3K7RP	7	E	2	4	A	N
Y3URV2	7	E	2	4	A	N
Y4LRUX	7	E	2	4	A	N
Y8NQAW	7	E	2	4	A	N
YFF9GD	7	?	2	4	A	N
YH3LMB	7	E	2	4	A	N

TABLE 1

Recovered Characters						
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>
YHKUB6	7	E	2	4	A	N
YQ2B7Z	7	E	2	4	A	N
YXHTJ8	7	E	2	4	A	N
YXY8MB	7	E	2	4	A	N
ZGPFK7	7	E	2	4	A	N

Response Summary						Participants:171
	<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	7	E	2	4	A	N
Number	167	153	166	167	166	166
Percent	97.7%	89.5%	97.1%	97.7%	97.1%	97.1%

Conclusions

TABLE 2

WebCode	Conclusions
2C7XJZ	Standard serial number restoration techniques revealed the following characters: 7E24AN.
2EUET9	Chemical restoration techniques were applied to item #1 and the original serial number was restored as 7E24AN.
2HVMXH	The obliterated serial number on Item 1 was restored to read '7E24AN'.
2M7KJJ	The serial number, located on the bar stock, appeared to have been obliterated through grinding. I used magnetic particle inspection technique (MPI) and successfully restored the following serial number: 7E24AN. Digital images were taken during the restoration. All the digital images are included in the case notes.
2PXP7P	Examination of the bar stock revealed an obliterated area. Standard restoration techniques revealed the following characters "7E24AN".
2ZECFQ	Examination of item 1 revealed an obliterated area. Standard restoration techniques revealed the following characters: "7E24AN".
392RHY	The original serial number was 7E24AN.
3J7NHW	Using standard laboratory restoration techniques, the obliterated serial number on Item 1 was restored to read 7E24AN.
3PTCEM	The following findings reflect the professional opinion of the examiner authoring this report. Examination of Item 1 revealed one (1) metal bar stock with suspected obliterated serial number. Using standard serial number restoration techniques, an attempt was made to restore the serial number with the following results: Serial Number: 7 E 2 4 A N was restored on Item 1.
3Q3QDF	Item 1 has an obliterated area. Physical examination and chemical processing of the obliterated area restored the original serial number and it was determined to be "7E24AN".
44LLDD	The obliterated serial number on the submitted bar stock, Item 1, is 7E24AN.
496EV8	Item 1 was submitted with a possible obliterated serial number. The serial number was restored using magnetic and chemical processes. The serial number is 7E24AN.
49XF8N	Attempts to raise the obliterated serial number of the bar stock, specimen #1, by chemical methods revealed the following partial serial number: 7_24AN.
4A8MAG	we used only elektromagnetic method.After the method we found the serial number "7E24AN".
642947	in the result of examination the following signs would be restored/recovered: "7E24AN"
6CJDL7	Exhibit #1: one piece of bar stock with an obliterated serial number. Findings: Examination of Exhibit #1 revealed an obliterated area on one side of the piece of bar stock. Standard restoration techniques revealed the following characters "7E24AN".
6JWNAR	Using standard laboratory restoration techniques, the serial number on Item #1 was restored to read 7E24AN.
6L7EYV	Item 1 was physically and microscopically examined. The serial number area of Item 1 was prepared and treated with chemical reagents. As a result of these actions, no discernible characters were developed.
78JNFJ	The following findings reflect the professional opinion of the examiner authoring this report. Using chemical and physical restoration techniques, an attempt was made to restore the serial number with the following results: Serial Number: 7 E 2 4 A N was restored on Item 1.

TABLE 2

WebCode	Conclusions
79VLMMA	One (1) piece of steel bar stock (1" x 2 1/2") submitted with a suspected obliterated serial number. Approximately 1" x 1" of surfaced defaced through abrasions/grinding. Serial # 7E24AN restored using Magnetic Particle Inspection process. Evidence scribed "CTS 18-5251" by examiner for id purposes. Note: evidence was submitted in a tan envelope labelled "2018 CTS Forensic Testing Program, Test No. 18-5251: Serial Restoration sample pack: SNR2".
7KPRNK	The obliterated serial number on the piece of bar stock (Item 1) was partially restored to read 7*24AN. The asterisk represents partially restored character fragments which could be "B, D, E, F, H, K, N, or 1". No E-trace was run on the partially restored serial number.
7V7GL4	Using the acid-etch method, the defaced serial number on the 0001-AA piece of metal bar stock was partially restored to read, '7?24AN' where the '?' appears to be a '5' or a '6', however, no conclusive determination was made. The 0001-AB piece of aluminum bar stock was used as a reference for the size, shape and positioning of the serial number on the 0001-AA piece of metal bar stock.
7Y9HNM	The obliterated area of Exhibit 1 was visually examined and chemically processed. The characters were restored and appeared as follows: 7E24AN.
86DGWQ	Examination and restoration of the obliterated area on Item 1 (a piece of bar stock with suspected obliterated serial number) revealed the following characters: "7*24AN". The * represents an E or F.
8HQZYQ	Chemical treatment was successful in chemically restoring a serial number on the bar. The serial number on the bar was restored to read 7 E 2 4 A N.
8QVN9K	The fully restored serial number on Item 1 reads: 7 E 2 4 A N. No examination was requested nor performed on Item 2.
8VK7HP	The serial number was determined to be "7E24AN". The interpretation and opinions in this document are based upon my knowledge of the case factors and/or manufacturer information available at the time this report was authored.
8WV6JQ	The serial number was restored and interpreted to read 7E24AN.
8X7AUT	Serial Number Restoration Analysis: Methodology - Chemical Reagent Etching/Microscopy/Physical: Serial number restoration procedures revealed the serial number of Item 1, the bar stock, to be: 7E24AN
94T9V2	Examination and processing of the obliterated serial number on the submitted plate restored the serial number to read "7E24AN"
9CLLTF	Fry's and Turner's reagents were used. After applying of three cycles obliterated number could be able to visualized.
9JMQTC	The obliterated serial number on Item 1 was restored to read "7E24AN".
9KHAXY	One silver metal object (MO-1) consistent with metal bar stock. Serial number obliterated by unknown method, but MO-1 displays deep milling marks on obliterated area. Serial number restored using a combination of polishing and magnaflux. Serial number 7E24AN successfully recovered.
9LTAXZ	A serial number restoration was performed on this item. Based upon the CTS paperwork, the expected serial number configuration is six alphanumeric characters. The serial number was fully restored and appeared to be 7E24AN.
9MHPXA	The serial number of item 1 to read "7E24AN"
9RKGG9	Forensic restoration procedures were applied to a milled section of the bar stock in an attempt to restore any possible obliterated characters. A series of six previously stamped characters were restored and read: 7?24AN. The question marked character could not be fully restored or interpreted, however had the appearance of an E, B or similar.
AAPMU9	The restored characters on the piece of material after serial number restoration using Fry's reagent were found to be 7 8 2 4 4 N.

TABLE 2

WebCode	Conclusions
AGXUNJ	1. Examination of Exhibit 1 disclosed one piece of a metal bar with an obliterated area which was visually examined and processed with magnetic particle solution. The serial number was restored to read 7E24AN.
AH8RC9	The obliterated serial number on the submitted piece of metal bar stock (Item 1) is "7E24AN".
AQFL4F	The obliterated serial number on the firearm in item A1-1 was restored and found to be 7-E-2-4-A-N. A1-2 used for reference on character appearance.
AYXPJV	I conducted a serial number restoration using laboratory method number *****. The alpha-numeric number was successfully retrieved in full and is "7E24AN".
AYZFNH	Serial Number Restoration Analysis: Methodology- Chemical Reagent Etching/Microscopy: Serial number restoration procedures revealed the serial number on Item 1, the bar stock, to be: 7E24AN
B4K9NW	The serial number of the item 1 was restored to read 7E24AN, this conclusion was verified by the other firearms examiner our lab.
B6VYYM	In preparation for the application of acid the area/location of the serial number was sanded and polished. Upon applying Turners Reagent, Davis Reagent and then Frys Reagent to the polished area the serial number was observed and found to be 7E24AN.
B8HPX7	The serial number 7E24AN was recovered using the electromagnetic process.
BGR38M	Examination and restoration of the serial number of Item 1 (a piece of bar stock) revealed the following characters: "7 E 2 4 A N".
BJTZQ3	I restored the serial number for Item 1 to 7E24AN.
BKA8X6	Serial number recovered by using the Magnetic Particle method.
BMYF6K	Restoration procedures on exhibit SNR2 revealed the serial number to be: 7E24AN
BN6ZTK	Visual inspection of Item 1 revealed a defaced area where a serial number is normally observed. The defaced area on Item 1 was magnetically processed, resulting in a full recovery of the Item 1 serial number. The recovered number reads as follows: 7E24AN.
BTL7RF	The serial number on the metal bar, item 1, was restored to read 7E24AN.
BYQX6K	Examination and mechanical processing of item 1 revealed that the original serial number is 7E24AN.
C4GWQT	Item 1 was examined for serial number identification. An obliteration was located and a restoration was completed on the area. The following serial number was restored: 7E24AN.
C4HLYW	The obliterated area was polished and MagnaFlux was used to fully restore the six character serial number. The serial number was determined to be 7E24AN.
C8ZQQZ	Examination of Exhibit #1 revealed an obliterated area on the bar stock. Standard serial number restoration techniques revealed the following characters "7E24AN".
CAKV6P	Serial Number Restoration Analysis: Methodology-Chemical Reagent Etching/Microscopy: Serial number restoration procedures revealed the serial number on Item 1, the bar stock, to be: 7 E 2 4 A N
CGMWD7	The serial number restored by a electromagnetic method on the obliterated portion of metal bar stock (item 1) is 7E24AN.
CMVB8M	THE SURFACE OF Q1 (ITEM 1) METAL BAR STOCK WAS POLISHED TO PREPARE IT FOR MAGNETIC RESTORATION. THE NUMBER RESTORED BY THE SERIAL NUMBER RESTORATION PROCESS READS: 7E24AN
CN6DXT	An area of the piece of steel bar had been milled or ground. I made an examination of the area and recovered the following series of characters '7E24AN'.

TABLE 2

WebCode	Conclusions
D292JV	After an preliminary magnetic investigation method, the obliterated serial number has been restored by using sandpaper and acid (Fry and Wazau). Finally a thermal restoration method was used. The second character could not be determined exactly, because of too low expression. It could be either "B" or "E".
D7KY6W	The examination and processing of the obliterated serial number was restored to read "7E24AN".
DAGKUD	The examination and chemical processing of the above item, revealed a full serial number, with sufficient characteristics to allow the Examiner to make a positive identification. The numbers recovered are as follows, "7E24AN".
DED68A	After the application of the magnetic particle inspection method and the acid etch method the obliterated alpha-numeric number on Item 1 was perceived as "7E24AN"
DJP67M	Serial number restoration techniques were applied to the defaced area of the bar stock (Item 001). The serial number of the bar stock was restored to read: 7 E 2 4 A N
DMR2VG	Examination of the submitted bar stock found the manufacturer's serial number to have been obliterated. Physical processing of the submitted bar stock restored the obliterated, original serial number to read "7E24AN".
DQ7LWB	The obliterated serial number on the piece of bar stock (item 1) was partially restored to read 7 * 2 4 A N, with the * most likely being a B or an E.
EGJ3ZH	Examination and processing of the Q-1 (Item 1) bar stock restored the original obliterated serial number, which was determined to be 7E24AN.
EK28PZ	Examination and restoration of the obliterated area on Item 1 (a piece of steel bar stock) revealed the following characters interpreted as "7E24AN".
EZURDF	The obliterated serial number on the Item 1 bar stock was restored to read: 7E24AN
FB7GNQ	Attempts to restore the serial number on the submitted bar stock were unsuccessful. This means either, the bar stock was not stamped with a serial number or, the serial number could not be restored.
FFX337	The Serial no> (7E24AN) was recovered using the chemical etching process.
FG9U2E	Serial number chemically processed and restored to read "7E24AN".
FGCC9Q	Examination of the submitted metal bar stock found the manufacturer's serial number to have been obliterated. Magnetic processing of the submitted metal bar stock restored the obliterated, original serial number to read "7E24AN".
FL94CG	The obliterated area on the piece of bar stock in item 1 was chemically etched and the serial number was determined to be 7E24AN.
FQXKN7	The exhibit's surface was lightly polished, using grinding paper 600. the polished surface was then treated with fry's reagent and electrolytic - acid etching accelerator. the sample was cleaned with water. the results were successfully photographed. 6 characters were seen - 7e24an
FZAKHH	Using standard laboratory restoration techniques, the obliterated serial number was restored to read: 7E24AN.
FZN2GG	The Bar stock (1) was physically and chemically processed. Its serial number was restored to read: 7E24AN
FZP2DB	The serial number on the bar, item 1, was partially restored to read "7**4A*".
GBL6G6	The obliterated serial number of Item 1 was restored to read "7E24AN". Should further analysis prove necessary, please contact the Firearms Laboratory.
GJWNHF	The bar stock (1) was physically/chemically/magnetically processed. Its serial number was restored to read: 7E24AN

TABLE 2

WebCode	Conclusions
GP33KK	Examinations showed the serial number of Item 1 to be obliterated. The serial number of Item 1 was restored using various polishing and chemical etching techniques and was found to be: 7E24AN.
GTHXP	Serial number "7E24AN" was restored by Magnetic Particle Inspection Method.
H2WVET	Serial Number Restoration Analysis: Methodology - Chemical Reagent Etching/Microscopy/Physical: Serial number restoration procedures revealed the serial number on Item 1, the piece of stainless steel bar stock, to be: 7E24AN
H8XCJ8	The serial number on the piece of bar stock submitted as Item 1 was restored and determined to be 7E24AN.
HC9A49	The examination and chemical processing of the above item revealed a full serial number, with sufficient characteristics to allow the examiner to make a positive identification. The characters recovered are as follows, "7E24AN".
HP2HGG	After three (3) rounds of chemicals used to restore serial numbers on magnetic materials (Fry's reagent, Turner's reagent, Davis' reagent and 25% Nitric acid solution), the alphanumeric characters "7E24AN" were visible. My findings were confirmed by [name].
HUR7HG	The hidden number is 7E24AN.
HXBB6H	This area was cleaned, polished and chemically processed in a attempt to restore the obliterated serial number. A serial number of 7E24AN was successfully restored.
J3G8KC	"Serial number restored to read 7E24AN."
JHZMVN	The serial number of Item 1 was restored to read: 7 E 2 4 A N. The Item 2 aluminum bar stock (standard) was not examined further.
JMNAMM	Following chemical etching, the characters ' 7 E 2 4 A N' were recovered and recorded.
JPG9WF	Using standard laboratory restoration techniques, the obliterated serial number on Item 1 was restored to read: 7 E 2 4 A N
JRNN8R	Examination of the metal plate revealed an obliterated area in the middle of one side of the plate. Standard restoration techniques revealed the following characters "7E24AN"
K7CF4C	Using standard laboratory techniques, the obliterated serial number on Item 1 was restored to read "7E24AN".
K7YNDG	The serial # on the metal bar was raised to be: 7E24AN
KC7EKT	Th obliterated serial number on Item 1 bar stock was chemically processed and restored to read "7E24AN".
KCLKXX	The obliterated serial number was electromagnetic processed and was restored to read 7E24AN,
KRG4C	The obliterated area on the piece of bar stock in item 1 was chemically etched and the serial number was determined to be 7E24AN.
KTPBX2	Item #1 was received with an obliterated area in the middle of the plate. Standard restoration techniques revealed the following characters "7E24AN"
KW6MRW	After to apply electromagnetic method, we determined the number of the bar stock is 7E24AN.
L9G698	The Item #1 bar stock was physically and chemically processed. Its serial number was restored to read: 7 E 2 4 A N. The evidence will be returned to the submitter.

TABLE 2

WebCode	Conclusions
LEMWEJ	On 09/10/2018, I received the 2018 CTS Test No. 18-5251: SERIAL NUMBER RESTORATION test from [name]. The test contained instructions, work papers, reporting forms, an aluminum standard bar, and the test bar labeled ITEM 1. I visually inspected Item 1 and found no readily visible alpha or numeric characters. Attempts to restore the serial number were made by sanding and polishing the surface with a Dremel tool and acid etching resulting in the serial number being restored to read, "7E24AN."
LQ6JNK	Examination and magnetic and chemical processing of the Q-1 bar stock restored the original obliterated serial number which was determined to be "7E24AN".
LRENZM	The defaced serial number of the bar stock, item 1, was physically, chemically, and magnetically processed to read: "7E24AN".
LUK4E7	Item 1: After processing the area where the material had been removed from the metal bar stock, a serial number was restored and appeared to read: 7E24AN.
ME2KEP	The serial# of the piece of bar stock was restored and determined to be 7_24AN, with the underlined space not clearly being determined.
MEKTZY	Using standard laboratory restoration techniques, the obliterated serial number on Item 1 was restored to read 7E24AN.
MXEEVX	On examination, I found no number on the bar stock as the surface of the bar was filed. After analysis, the obliterated serial number was partially restored and read as "7?24AN" where "?" denotes an unidentified alphabet or number.
MXY7VA	The bar stock (item#1) was physically, chemically and magnetically processed. It serial number was restored to read: 7E24AN
N42EVB	Item 1 was physically and microscopically examined. The serial number area of Item 1 was prepared and chemically processed. As a result of these actions, the serial number was restored to read 7E24AN.
NK8WPF	A serial number restoration was carried out on a piece of bar stock (Item 1804445/001) with an obliterated number. After the application of a chemical reagent, the following characters were developed - 7E24AN. The characters were confirmed using a known reference sample of alphanumeric numbers used in the manufacturing process. The developed characters had similar font and size to the reference sample provided.
NMXXV4	The defaced serial number was restored and appears to read: 7E24AN.
NQ9ZPM	Item #1 is a piece of bar stock, serial number obliterated. The obliterated serial number is located in the center of the bar stock. Acid etching procedures were performed and it was determined that the serial number was 7E24AN.
NZD3W6	The area of obliteration was polished then magnetically and chemically processed. The obliterated serial number was fully restored to read: 7 E 2 4 A N
P4ECJT	Prepared the surface of item 1 applies nondestructive method of magnaflux and obtain alphanumeric characters 7 E 2 4 A N.
P4YY7G	EXAMINATION OF THE SUBMITTED STAINLESS STEEL BAR STOCK FOUND THE MANUFACTURER'S ORIGINAL SERIAL NUMBER TO HAVE BEEN OBLITERATED. PHYSICAL AND MAGNETIC PROCESSING OF THE STAINLESS STEEL BAR STOCK RESTORED THE OBLITERATED, ORIGINAL SERIAL NUMBER TO READ "7E24AN".
P6MP2U	The serial number of interest was reported to consist of 6 characters. Area of interest was polished with steel wool prior to chemical processing. After it was determined that it was ferrous, the appropriate chemical etchants to include Davis, Turner, and Fry were utilized. Through examination and processing, the obliterated serial number was fully restored to read '7E24AN'.
P76KW3	The serial number on the metal bar was restored and appeared to read as: 7E24AN.

TABLE 2

WebCode	Conclusions
PED4BR	Item Q-1: is one (1) rectangular in shape, piece of aluminum bar stock, measuring 2-5/8" x 1-1/8" and weighing 1,497 grains. Serial number removed by milling and circular abrasions. Submitted in small tan envelope labeled "Test No. 18-5251, Item 1". CTS test # etched on back area, by examiner, for identification purposes. Unable to restore serial number using chemical etching process. Unable to determine the number of characters involved.
PM4TML	Acid etching procedures were performed and it was determined that the serial number was restored to read: 7E24AN.
QFLVGE	The restored serial number was 7, E, 2, 4, A, N.
QM9GT7	Visual examination, polishing and magnetic particle inspection (MagnaFlux) method were performed on the Q-1 bar stock. The original obliterated serial number was restored and determined to be 7E24AN.
QYXH3L	Using standard serial number restoration techniques, the serial number on item 1-1-1 (CTS item 1) was restored to read: 7E24AN
R243QL	Restoration of the obliterated serial number was performed on the questioned surface of the metal bar stock marked "Item 1". The restored serial number was found to have six characters - "7E24AN".
R6JUGE	The obliterated serial number was chemically and magnetically processed and restored to read "7E24AN".
RAVR3F	The number serial 7E24AN was recovered using the technical not destructional and not invasive "Magnaflux", time the execution one hour.
RGWRQP	Forensic restoration methods applied to the ground area of the metal bar stock restored a series of characters with similar font and style to the "Aluminium standard" bar supplied that read:7?24AN. The question marked character could not be restored or interpreted.
RXXABX	Number before examination was invisible. Number after examination 7 * 2 4 A N. * Means the alphabet at this place was partially recovered and it can be B, D or E
RLN2VG	One (1) ferrous metal bar (approx. 2 5/8" x 1") submitted with a suspected serial number. 1" x 1" area of surface was removed by grinding. Serial number "7E24AN" was recovered using magnetic particle inspection process. Bar was scribed with "CTS 18-5251" onto the back for identification purposes.
RMZY47	Examination of Item SNR2 revealed an obliterated area. Standard restoration techniques revealed the characters "7E24AN".
T23MY8	The item 1 obliterated serial number, located in the center of the metal bar, was chemically processed and determined to be "7E24AN".
TEQPHY	Examination of Item 1 revealed an obliterated area. Examination of this obliterated area with standard restoration techniques revealed the following characters: "7E24AN".
TFJMP7	In preparation for the application of acid the area/location of the serial number was sanded and polished. Upon applying Turner Reagent, then Davis Reagent and then Frys Reagent to the polished area, the serial number was observed and found to be 7E24AN.
TWXBNY	performed the procedure of developing serial numbers using the Magnaflux magnetic method, the highlighting of the alphanumeric digits corresponding to 7E24AN was obtained
U2NZLH	The serial number of Item 1 was chemically processed and restored to read: 7E24AN
UFEKGD	Laboratory examination found submission 001-2 had an obliteration serial number. Magnetic and chemical restoration methods were conducted and found the serial number to read 7E24AN.
UQTMVX	The Item #1 bar stock was physically and chemically processed. Its serial number was revealed to read: 7 E 2 4 A N.

TABLE 2

WebCode	Conclusions
UT2RED	The serial number was restored to read 7 E 2 4 A N. The metal bar stock with characters was not examined further.
UYNKL8	We strongly support the hypothesis that piece has serial number 7E24AN
VC3GUE	Item #1 is a piece of bar stock with a suspected obliterated serial number. The suspected obliterated serial number is located on the top center portion of the piece of bar stock. Scour pad polishing and acid etching procedures were performed and it was determined that the suspected obliterated serial number was restored to read 7E24AN.
VC748L	After application of the electro-magnetic process, we determined the serial number of the metal bar stock as 7E24AN.
VEDCHR	The obliterated serial number on Item 1 was restored to read 7E24AN.
VMULE2	Examination and processing of the Q-1 bar stocked restored the original serial number, which was determined to be 7E24AN.
W4PTLY	Examination and processing of the Q-1 bar stock restored the original obliterated serial number, which was determined to be 7E24AN.
W66Y3A	Chemical treatment of the obliterated area on CTS Item 1 revealed the following serial number: 7E24AN
W88XCG	The serial number on Item 001 was found to be obliterated. The obliterated serial number was chemically processed, however the serial number was unable to be restore.
W9QJ9D	The defaced serial number of Item 1 was physically, magnetically and chemically processed to read: "7 E 2 4 A N".
WB97FQ	The obliterated serial number on Item 1 was restored to read 7E24AN.
WFJ42T	The investigation revealed that the number on the metal part had been removed by instrumental intervention. With electromagnetic method applied to the surface where the removed number is located, "7E24AN" characters where detected.
WQ4JYT	Magnetic processing restored an obliterated serial number on Exhibit 1 that was concluded to be "7E24AN".
WWHUCW	The following submitted evidence was visually and microscopically examined: Exhibit 1: Metal bar with obliterated section 1. The obliterated area on Exhibit 1 was processed using magnetic particle inspection. The characters were restored and appeared as follows: 7E24AN.
WYFKE3	Serial Number: Attempts to restore the obliterated serial number of Item 1 were successful. The restored serial number is 7E24AN.
X896ZU	Examination of Exhibit 1 revealed one ferromagnetic metal bar with an obliterated area on the surface. Standard restoration techniques revealed the following characters: 7E24AN.
X8Q4B8	The suspected obliterated serial number was restored and found to consist of the following six (6) characters 7E24AN.
XCGDJJ	The serial number was completely restored to read 7E24AN.
XFMTX3	The submitted specimen marked as Item 1 was examined and identified as a piece of metal bar stock with a suspected obliterated serial number. The obliterated serial number, located on the bar stock, was chemically processed and successfully restored to read: "7E24AN".
XJ62FB	Q-1, One (1) piece of steel (Approx. 2 5/8" 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 "7E24AN" restored using magnetic partial inspection and chemical etching restoration, scribed with case number "18-5251" by examiner.

TABLE 2

WebCode	Conclusions
XJECME	I restored the obliterated serial number on Item 1 to read 7E24AN.
XPR46R	Exhibit 1 was physically examined and there is an area of obliteration located on the bar stock. This area was chemically and magnetically processed and the following characters were restored "7E24AN".
XQKQTP	The serial number of Item 1 was fully restored to read 7E24AN.
Y3K7RP	Using standard restoration methods, the obliterated number was on Item 1 was restored to read: 7E24AN.
Y3URV2	The submitted specimen marked as Item 1 was examined and identified as a metal bar stock with a suspected obliterated serial number. The obliterated serial number, located on the mid-section of the metal bar stock, was chemically processed and restored to read "7E24AN".
Y4LRUX	The serial number was determined to be "7E24AN". The interpretations and opinions in this document are based upon my knowledge of the case factors and/or manufacturer information available at the time this report was authored.
Y8NQAW	Examination of the submitted bar stock found the manufacturer's serial number to have been obliterated. Magnetic and physical processing of the bar stock restored the obliterated, original serial number to read "7E24AN".
YFF9GD	Item 1: The serial number was partially restored to read 7?24AN, where the "?" equals a possible E or B.
YH3LMB	The serial number on the block was restored to read: 7 E 2 4 A N
YHKUB6	Item 1 consisted of a small piece of metal with a broad groove on one side. Grinding or sanding marks were visible within the groove. Number restoration techniques were applied to the area of grinding or sanding marks. A single line of characters was restored. These characters were, in my opinion, "7 E 2 4 A N"
YQ2B7Z	The serial number was restored and is 7E24AN.
YXHTJ8	An attempt was made to restore the obliterated serial number on the sample submitted. Utilising both a chemical technique (Fry's reagent) and a non destructive technique (Magnaflux) the following was recovered 7E24AN.
YXY8MB	Restoration techniques were applied to item #1 and the original serial number was restored as "7E24AN".
ZGPFK7	The area with the alleged obliterated serial number on Item 1 was subjected to serial number restoration techniques utilizing the magnetic process and an acid etching process. The result of the examination was the restoration of the number 7E24AN on Item 1.

Sample Preparation

(listed in order of use)

TABLE 3

Sample Preparation			
WebCode	Method	Tool Used	Grit Size
2C7XJZ	Visual	Stereoscope	
	Polishing	Dremel	
2EUET9	Light buffing	Dremel	
2HVMXH	N/A		
2M7KJJ	Visual		
2PXP7P	Polishing	Dremel	
2ZECFQ	Visual	Stereoscope	
	Polishing	Dremel	
392RHY	Cleaning with water		
	Cleaning with organic solvent		
	Sanding	Abrasive papers	100
	Polishing	Abrasive paper	300
3J7NHW	Polishing	Sand paper	400
3PTCEM	None	Stereoscope	
3Q3QDF	Visual	Stereoscope	
44LLDD	Polishing	Dremel	
496EV8	Sanding	Sand paper	120
	Polishing	Steel wool	
49XF8N	Polish	Acetone	
	Sand	Dremel	60 grit
4A8MAG	Polishing	Dremel	
642947	None		
6CJDL7	Visual		
	Polishing		Brownells #74 Extra Fine Cratex Wheel 190-025-744
6JWNAR	Visual	Stereoscope	
	Sanding	Sand paper	400 grit, 150 grit
	Polishing	Steel wool	

TABLE 3

Sample Preparation			
WebCode	Method	Tool Used	Grit Size
6L7EYV	Visual	Stereoscope	
	Sanding	Sand paper	220 and 320 and 400
	Polishing	Dremel	
	Polishing	Steel wool	
78JNFJ	None		
79VLMA	None		
7KPRNK	Visual		
	Polishing	Rotary Tool	425 Wheel
7V7GL4	Polishing	Rotary Tool	
7Y9HNM	None		
86DGWQ	Polishing	Rotary Tool	
8HQZYQ	Polishing	Rotary Tool	
	Cleaning	Acetone	
8QVN9K	Polishing	Dremel	
8VK7HP	Polishing	Dremel	
8WV6JQ	Polishing	Bench grinder outfitted with a Scotch-Brite medium grade deburring wheel.	
8X7AUT	Sanding	Sand paper	180 (3M)
94T9V2	Sanding	Dremel	80/324/400
9CLLTF	Visual	Hand lence	
9JMQTC	Polishing	Cratex Dremel tool	
9KHAXY	Polishing	Dremel	
9LTAXZ	Polishing	Dremel	
9MHPXA	Sanding	Sand paper	800
9RKGG9	Polishing	Sand paper	600 followed by 1200
	None	Positest	
AAPMU9	Polishing	Dremel	41
AGXUNJ	None		
AH8RC9	Polishing	Dremel	

TABLE 3

Sample Preparation			
WebCode	Method	Tool Used	Grit Size
AQFL4F	Grinding	Dremel	
AYXPJV	Visual	Stereoscope	
	Sanding	Sand paper	P600 & P1200
	Cleaning	Acetone	
AYZFNR	None		NA
B4K9NW	Visual	Stereomicroscopic	
	Cleaning	Acetone	
	Sanding	Sandpaper	600
	Polishing	Moto-tool	
B6VYYM	Sanding	Dremel	120 Grit
	Polishing	Emery paper	1200 Grit
B8HPX7	Photography to document condition initial obliterated area The sample was cleaned with solvent. Visual observation	Stereomicroscope	
	Polishing of the sample surface	Sandpaper	600
BGR38M	Polishing	Dremel	Cratex Manufacturing Co. Kit 777 Fine Textured Wheel
BJTZQ3	None		
BKA8X6	Visual	None	
BMYF6K	Polishing	Rotary Tool	
BN6ZTK	None		n/a
BTL7RF	Visual	Stereoscope	
BYQX6K	Visual	Stereoscope	N/A
	Sanding	Sand paper	400
C4GWQT	Polishing	fine sand paper	N/A- (fine)
C4HLYW	Polishing	Dremel	
C8ZQQZ	Visual	Stereoscope	N/A
CAKV6P	None		

TABLE 3

Sample Preparation			
<u>WebCode</u>	<u>Method</u>	<u>Tool Used</u>	<u>Grit Size</u>
CGMWD7	Polished the sample until was mirror smooth	Sand paper	320
	Prepared and polished the surface	Moto-tool	
	cleaned the sample with acetone		
CMVB8M	Polishing	Dremel	
CN6DXT	Sanding	Sand paper	180 and 600 and polishing
D292JV	None		Magnetic Powder-Fluid-Pad
	Sanding	Sand paper	180 - 800
	Polishing		Heating up until glowing
D7KY6W	Sanding	Dremel	400
	Visual	Stereoscope	
DAGKUD	Polishing	Dremel	
DED68A	Visual		
	Polishing	Dremel	
DJP67M	Sanding	Sand paper	180c
	Polishing	Dremel	grit illegible
DMR2VG	Polishing	Dremel	n/a
DQ7LWB	Grinding	Dremel	
	Sanding	Sand paper	220
	Polishing	Steel wool	
EGJ3ZH	Polishing	Dremel	
EK28PZ	Visual	Stereoscope	
	Cleaning	Acetone	
	Polishing	Dremel	#240 grit polishing wheel
EZURDF	Sanding	Sand paper	320 and 400
FB7GNQ	Sanding	Emery paper	240 then 400
	Polishing	Rotary Tool	
FFX337	Cleaning	Acetone	
FG9U2E	Sanding	Dremel	varied
	Polishing	Sand paper	varied

TABLE 3

Sample Preparation			
<u>WebCode</u>	<u>Method</u>	<u>Tool Used</u>	<u>Grit Size</u>
FGCC9Q	Visual	Stereoscope	N/A
FL94CG	Visual	Stereoscope	
	Polishing	Dremel	#425 polishing wheel
FQXKN7	Visual		
	Grinding		600 grit
FZAKHH	Sanding	Sand paper	150
FZN2GG	Sanding	Sand paper	Fine grit
FZP2DB	Sanding	Sand paper	220
GBL6G6	Polished with cratex wheel	Dremel	fine
GJWNHF	Sanding	Sand paper	medium
GP33KK	Polishing	Dremel	3M Fine
	None	Stereoscope	
GTHXP	Polishing	Fordham Tool	
H2WVET	Visual	Microscope	
	Sanding	Sand paper	180
H8XCJ8	Sanding	Dremel	220 Grit
HC9A49	Polishing	Dremel	
HP2HGG	Visual		
	Polishing	Sand paper	Super fine (220)
HUR7HG	Sanding	Sand paper	400
	Sanding	Sand paper	600
	Polishing	Diamond paste	
HXBB6H	Cleaning	Acetone	
	Sanding	Sand paper	400
J3G8KC	Polishing	Sand paper	VARIED
	Sanding	Dremel	VARIED
JHZMVN	Visual	Stereoscope	
	Cleaning	Kimwipe	
	Polishing	Sand paper	P100
JMNAMM	Sanding	Sand paper	100

TABLE 3

Sample Preparation			
<u>WebCode</u>	<u>Method</u>	<u>Tool Used</u>	<u>Grit Size</u>
JPG9WF	Visual	Eyes	
	Visual	Stereoscope	
JRNN8R	Visual		
K7CF4C	None		
K7YNDG	None	Dremel	
KC7EKT	Polishing	Dremel	
KCLKXX	Visual and microscopic examination	Stereomicroscope	
	The surface was cleaned with acetone Polished with sandpaper		600
KRGT4C	Polishing	Dremel	#425 polishing wheel
KTPBX2	Polishing	Dremel	?
KW6MRW	Visual inspection	Stereomicroscope	
	Cleaning and sanding	Sandpaper	400-600
	Polishing	Moto-tool	
L9G698	Polishing	Dremel	
LEMWEJ	Visual	Stereoscope	
	Polishing	Dremel	Rotary emery stone
LQ6JNK	Polishing	Dremel	
LRENZM	None		
LUK4E7	None		
ME2KEP	None		
	Polishing	Dremel	120
MEKTZY	Polishing	Dremel	220
MXEEVX	Cleaning	Acetone	
MXV7VA	Sanding	Sand paper	coarse
N42EVB	Visual	Stereoscope	
	Sanding	Sand paper	120, 220, 320, 400, 600
	Polishing	Rotary Tool	
	Polishing	Steel wool	

TABLE 3

Sample Preparation			
WebCode	Method	Tool Used	Grit Size
NK8WPF	Sanding	Emery paper	200
	Sanding	Emery paper	400
	Sanding	Emery paper	800
	Sanding	Emery paper	1200
	Polishing	Cut and Polish	
NMXXV4	None		
NQ9ZPM	None	Magnet	
NZD3W6	Polishing	Dremel	
P4ECJT	Physical and microscopic observation of the surface in item 1 research		
	Mirror polishing surface effect of item 1	Mototool	100 grit
P4YY7G	Polishing	POLISHING WHEEL	N/A
	Grinding	Dremel	N/A
P6MP2U	Visual		
	Polishing	Steel wool	
P76KW3	Polishing	Steel wool	
PED4BR	Polishing	Polishing Tool	
PM4TML	N/A		
QFLVGE	Sanding to remove grind marks	Emery Paper	P400
QM9GT7	Polishing	Dremel	
QYXH3L	Polishing	Dremel	
R243QL	Polishing	Sand paper	Various grit sizes were used (100, 360, 1500).
R6JUGE	Polishing	Dremel	
RAVR3F	observation	magnifying glass	
	surface cleaning #400, #600	sanding	
	Surface contact magnaflux and magnetic particles	magnaflux	

TABLE 3

Sample Preparation			
WebCode	Method	Tool Used	Grit Size
RGWRQP	Cleaning	Paint stripper	
	None	Cast surface	
	Polishing	Sand paper	1200 grit
	None	Positest	Ferrous- steel
RJXABX	Sanding	Sand paper	120 grit
RLN2VG	Polished	Rotary Tool	
RMZY47	Visual	Stereoscope	
	Polishing	Rotary Tool	
T23MY8	Sanding	Steel wool	N/A
TEQPHY	Polishing	Dremel	
	Visual		
TFJMP7	Sanding	Dremel	120
	Polishing	Emery paper	1200
TWXBNY	Visual	Acetone	NO
U2NZLH	Sanding	Dremel	unknown
	Polishing	Dremel	unknown
UFEKGD	Polishing	Dremel	
UQTMVX	Polishing	Dremel	
UT2RED	Visual	Stereoscope	
	Sanding	Sand paper	120 and 320
	Polishing	Dremel	
UYNKL8	Visual	Microscope	
	Sanding	Sand paper	250
VC3GUE	None		
VC748L	Visual and microscopic examination	Stereomicroscopic	
	Sanding and polishing	Sandpaper	400
	Cleaned surface with acetone		
VEDCHR	Polishing	Emery Stones	120, 240, 320, 600 grit
VMULE2	Polishing	Dremel	

TABLE 3

Sample Preparation				
WebCode	Method	Tool Used	Grit Size	
W4PTLY	Visual	Stereoscope		
	Polishing	Dremel	Polishing Wheel 425	
W66Y3A	Sanding	Rotary Tool	medium	
	Sanding	Steel wool		
	Polishing	Rotary Tool	fine	
W88XCG	Sanding	Sand paper	80 - 150 grit	
	Sanding	Detail Sander	Coarse and Fine	
W9QJ9D	Polishing	Dremel		
WB97FQ	Polishing	Dremel		
WFJ42T	Cleaning	Acetone		
WQ4JYT	Polishing	Rotary Tool	N/D	
WVHUCW	Visual	Stereoscope		
WYFKE3	Polishing	Dremel		
X896ZU	Visual		n/a	
X8Q4B8	Visual under stereoscope	Stereo Microscope		
	Sanding	Fine grit sandpaper	fine	
	Visual	Stereo Microscope		
XCGDJJ	Polishing	Dremel	Dremel polishing wheel 425	
XFMTX3	Polishing	Steel wool	N/A	
XJ62FB	Polished	Dremel		
XJECME	None	MagnaFlux without surface prep	N/A	
	Sanding	Sand paper	220, 400, and 800	
XPR46R	Polishing	Dremel		
XQKQTP	Polishing (after magnaflux)	Steel wool	Grade 0000	
Y3K7RP	Sanding	Sand paper	150 and 400	
	Polishing	Dremel	Polishing compound	
Y3URV2	Polishing	Steel wool	N/A	
	Polishing	Dremel	N/A	
Y4LRUX	None			

TABLE 3

Sample Preparation			
WebCode	Method	Tool Used	Grit Size
Y8NQAW	Sanding	Sand paper	Fine B T2
YFF9GD	Polishing	Dremel	
YH3LMB	Polishing	Dremel	
YHKUB6	None	Sand paper	100, 180, 220, 400, 1200
YQ2B7Z	Visual		
	Sanding	Sand paper	240
	Polishing	Steel wool	
YXHTJ8	Sanding	Sand paper	P320 GRADE
YXY8MB	Polishing	Dremel	
ZGPFK7	Sanding	Sand paper	100
	Sanding	Dremel	400
	Polishing	Emery paper	1000
	Polishing	Dremel	

Response Summary

Participants: 171

Sample Preparation

Visual Method: 43

Sanding Method: 52

Polishing Method: 99

None: 27

Note: The total preparation methods used 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

Recovery Methods		
WebCode	Method	Time
2C7XJZ	Fry's Reagent	~15 minutes
2EUET9	Fry's	~20 min continuous application
2HVMXH	MagnaFlux	
2M7KJJ	Magnetic Particle Inspection (MPI)	
2PXP7P	Fry's Reagent	5 min
	25% Nitric Acid	1 min
2ZECFQ	25% Nitric Acid	approx. 40 minutes
	Modified Fry's reagent	approx. 40 minutes
392RHY	Chemical etching with Fry's Reagent	5 mins.
3J7NHW	MagnaFlux	
	Fry's Reagent	~3 1/2 HOURS
3PTCEM	Fry's Reagent	1 HOUR
3Q3QDF	MagnaFlux	Minutes, while electricity was working
	Electro-acid	
44LLDD	MagnaFlux	
496EV8	MagnaFlux	
	Fry's Reagent	10 seconds
	Davis Reagent	10 seconds
	Turner's Reagent	10 seconds
49XF8N	Davis, Turner, Fry	10 seconds each
	Fry, Turner, Davis	10 seconds each
	Fry, Davis, Turner	20 seconds each
	Davis, Fry, Turner	30 seconds each
	Fry, Davis, Fry, Davis	10 seconds each
	Fry, Turner, Fry, Davis	10 seconds each
4A8MAG	Electro-magnetic	
642947	Fry's Reagent	nearly 1 hour
	reagent by Adler	nearly 2 hours
6CJDL7	Fry's Reagent	8 minutes
	Acidic Ferric Chloride	8 minutes
6JWNAR	MagnaFlux	
	25% Nitric Acid	approximately 1 minute

TABLE 4

Recovery Methods		
WebCode	Method	Time
6L7EYV	Turner's Reagent	alternate with and used with Fry's
	Fry's Reagent	60+ mins
	Ferric Chloride	~1 min
	Acidic Ferric Chloride	~1 min
	Sodium Hydroxide	~1 min
78JNFJ	Fry's Reagent	Swabbed over area for 30 secs- a couple minutes (approximate time)
79VLMA	MPI (MagnaFlux)	
7KPRNK	Davis Reagent	<1 minute
	Turner's Reagent	>20+ minutes with constant application
	Fry's Reagent	many hours with periodic reapplication
	MagnaFlux	
	Sodium Hydroxide (2.5%, 10%)	
	Nitric Acid 25%	>20+ minutes with constant application
7V7GL4	Acid Etch Method	
7Y9HNM	MagnaFlux	
86DGWQ	Fry's Reagent	Approx 25-30 minutes with water rinses
8HQZYQ	Fry's Reagent	3-4 minutes
	Acidic Ferric Chloride	3-4 minutes
	Ferric Chloride	10 minutes
8QVN9K	Acid Etch Method	10 seconds
	Turner's Reagent	10 seconds
	Fry's Reagent	10 seconds

TABLE 4

Recovery Methods		
WebCode	Method	Time
8VK7HP	Magnetic Particle Inspection (MPI)	
	Polished	
	Davis Reagent	~1 minute
	Fry's Reagent	~ 30 seconds
	Davis Reagent	~1 minute
	Turner's Reagent	~ 10 seconds
	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	~1 minute
	Davis Reagent	~1 minute
	Turner's Reagent	~10 seconds
	Davis Reagent	~1 minute
	Fry's Reagent	~1 minute
	Turner's Reagent	~10 seconds
	Davis Reagent	~ 1 minute
Turner's Reagent	~ 10 seconds	
8WV6JQ	Fry's Reagent	10-20 seconds
	Fry's Reagent	10-20 seconds
	Turner's Reagent	10-20 seconds
	Rebuffed/Dremel	
	Ferric Chloride	10-20 seconds
	Ferric Chloride	10-20 seconds
	Fry's Reagent	10-20 seconds
	Turner's Reagent	10-20 seconds
8X7AUT	Davis	20 seconds
	Turner's Reagent	20 seconds
	Fry's Reagent	25 seconds
	Fry's Reagent	45 seconds
94T9V2	CUPRIC CHORIDE/ELECTRICITY	10 MINUTES
	MagnaFlux	2 MINUTES
9CLLTF	Turner's Reagent	10 seconds
	Fry's Reagent	10 seconds
9JMQTC	MagnaFlux	
	Fry's	15 minutes
	MagnaFlux	

TABLE 4

Recovery Methods

WebCode	Method	Time
9KHAXY	Fry's Reagent	1 minute intervals
	Bill Fort's Reagent	1 minute intervals
	Polishing	
	MagnaFlux	
9LTAXZ	Davis Reagent	1 min
	Davis Reagent	2 min
	Davis Reagent	3 min
	Davis Reagent	4 min
	Davis Reagent	3 min
	Turner's Reagent	1 min
	Turner's Reagent	2 min
	Turner's Reagent	3 min
9MHPXA	Fry's Reagent	3 applications ~ 10 seconds each
	Acidic Ferric Chloride	30 minutes
9RKGG9	Fry's Reagent	On and off for varied lengths of time. More than 2 hrs in total.
	alternating with sodium hydroxide on occasions	Less than 10 mins
AAPMU9	Fry's Reagent	1 hour
AGXUNJ	Magnetic Particle Inspection (MPI)	
AH8RC9	Davis Reagent	~30 sec, x4
	Turner's Reagent	~30 sec, x3
	Fry's Reagent	~10 sec, x1
	Davis Reagent	~20 sec, x4
AQFL4F	Acid Etch Method	25% Nitric Acid, 1 min
	MagnaFlux	
AYXPJV	Fry's Reagent	10 - 15 minutes
AYZFNR	Fry's Reagent	10 min
B4K9NW	Electromagnetic method with magnetic particles "Magnaflux"	
B6VYYM	Acid Etch Method	Total of 5 hours
B8HPX7	Electromagnetic particles test "Magnaflux"	4 minutes
BGR38M	Fry's Reagent	45 minutes
BJTZQ3	MagnaFlux	
	Sanding (220,320,400)	
	Fry's	10 seconds and less

TABLE 4

Recovery Methods		
WebCode	Method	Time
BKA8X6	Fry's	1 minute
	Magnetic	2 minutes
BMYF6K	Magnetic Particle Inspection (MPI)	1 minute
	Fry's Reagent	5 minutes
	25% Nitric Acid	2 minutes
BN6ZTK	MagnaFlux	
BTL7RF	Acid Etch Method	15 minutes
BYQX6K	MagnaFlux	N/A
C4GWQT	Sodium Hydroxide	~5 seconds
	Nitric/Phosphoric	~5 seconds
	Nitric Acid	~2 seconds
	Sodium Hydroxide	~10 seconds
	Nitric & Phosphoric	~5 seconds
	Sodium Hydroxide	~10 seconds
	Nitric & Phosphoric	~5 seconds
	Nitric Acid	~5 seconds
	Sodium Hydroxide	~10 seconds
	Turner's	~2 seconds
	Nitric & Phosphoric	~10 seconds
	Sodium Hydroxide	~10 seconds
	Water	used to wipe clean after processing
C4HLYW	MagnaFlux	
C8ZQQZ	Fry's Reagent	10-15 seconds each time (approx. 20 times)
	25% Nitric Acid	10-15 seconds
CAKV6P	Fry's Reagent	1 hour total- off and on
CGMWD7	Electromagnetic particle inspection	4 minutes
CMVB8M	MagnaFlux	
CN6DXT	Fry's Reagent	20 minutes
D292JV	MagnaFlux	
	Acid Etch Method	
D7KY6W	MagnaFlux	
DAGKUD	Davis	10 sec
	Turner's Reagent	10 sec
	Fry's Reagent	10 sec

TABLE 4

Recovery Methods		
WebCode	Method	Time
DED68A	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	~ 5 minutes
	Acidic Ferric Chloride	~ 5 minutes
DJP67M	Magnetic Particle Inspection (MPI)	
	Turner's Reagent	appx 2 min w/swabbing
	25% Nitric Acid	30 seconds
DMR2VG	MagnaFlux	n/a
DQ7LWB	Fry's Reagent	5 hours
	Davis's	4 Hours
	Electro-magnetic	
EGJ3ZH	Magnetic Particle Inspection (MPI)	
EK28PZ	Fry's Reagent	2 - 20 minutes
EZURDF	MagnaFlux	
	Fry's Reagent	~ 5 minutes
	25% Nitric Acid	~ 5 minutes
FB7GNQ	Fry's Reagent	various intervals from 15 minutes to 3 hours over 3 days.
FFX337	Fry's Reagent	
FG9U2E	Fry's Reagent	5 hours
FGCC9Q	MagnaFlux	N/A
FL94CG	Fry's Reagent	Three (3) applications ~ 2 minutes each time
FQXKN7	Electro-acid	fry's. repeatedly several times till the serial number was restored. the sample was cleaned with water
FZAKHH	MagnaFlux	
	Fry's Reagent	3 minutes
FZN2GG	Fry's Reagent	30 Seconds at a time
	Davis Reagents	30 Seconds at a time
FZP2DB	Fry's Reagent	5 minutes, 10 minutes, 30 minutes, wiped on and off
GBL6G6	MagnaFlux	N/A
GJWNHF	Nitric Acid 25%	approx. 5 minutes
	Acidic Ferric Chloride	approx. 5 minutes
	MagnaFlux	30 seconds

TABLE 4

Recovery Methods		
WebCode	Method	Time
GP33KK	Magnetic Particle Inspection (MPI)	30-60 seconds
	Turner's Reagent	1-4 minutes
	Fry's Reagent	1-3 minutes
	25% Nitric Acid	30 seconds
GTHXPX	MagnaFlux (MPI)	
H2WVET	Davis Reagent	~ 20 seconds
	Turner's Reagent	~ 20 seconds
	Fry's Reagent	~ 30 seconds
	Fry's Reagent	~ 20 seconds
	Turner's Reagent	~ 20 seconds
	Fry's Reagent	~ 10 seconds
H8XCJ8	Acid Etch Method	
	Acidic Ferric Chloride	+ - 60 Seconds
HC9A49	Davis Reagent	10-20 seconds
	Turner's Reagent	10-20 seconds
	Fry's Reagent	10-20 seconds
HP2HGG	Fry's Reagent	~2 minutes
	Turner's Reagent	~2 minutes
	Davis' Reagent	~2 minutes
	25% Nitric Acid Solution	~2 minutes
HUR7HG	MagnaFlux	Daylight
	MagnaFlux	Ultraviolet light
HXBB6H	Fry's Reagent	10 min
	Acid Etch Method	10 min
J3G8KC	Fry's Reagent	5 HOURS
JHZMVN	MagnaFlux	
	Fry's Reagent	approximately 15 seconds
	10% Nitric Acid	approximately 30 seconds
	10% Nitric Acid	approximately 45 seconds
	Fry's Reagent	approximately 30 seconds
	10% Nitric Acid	approximately 45 seconds
JMNAMM	Fry's Reagent	30
JPG9WF	MagnaFlux	
	Acidic Ferric Chloride	On and off for a total of 2 hours

TABLE 4

Recovery Methods

WebCode	Method	Time
JRNN8R	Fry's Reagent	5 minutes
	Acidic Ferric Chloride	3 minutes
	25% Nitric Acid	8 minutes
K7CF4C	MagnaFlux	
K7YNDG	Fry's Reagent	brief time with swabbing
	Acidic Ferric Chloride	brief time with swabbing
	HNO3 dilute	some nitric acid dilute. back and forth with various acids a buffing
KC7EKT	Fry's Reagent	
	Turner's Reagent	
KCLKXX	Electromagnetic process "Magnaflux"	4 minutes
KRGT4C	Fry's Reagent	2 applications: ~5 minutes
KTPBX2	Fry's Reagent	Each swab ~30 seconds
	25% Nitric Acid	Each swab ~30 seconds
KW6MRW	Electromagnetic method "Magnaflux"	
L9G698	Fry's Reagent	10-30 sec, for a total of approx. 15 min.
LEMWEJ	Ferric Chloride	1 minute
	Stereoscope	No change
	Acidic Ferric Chloride	1 minute
	Stereoscope	No change
	10% Nitric Acid	1 minute
	Stereoscope	Begin to see shadows of characters
	10% Nitric Acid	2 minutes
	Stereoscope	Characters able to be read-"7E24AN"
LQ6JNK	Magnetic Particle Inspection (MPI)	
	Davis Reagent	5 minutes
LRENZM	MagnaFlux	
	Fry's Reagent	Total of 2.25 hours
LUK4E7	Fry's Reagent	Approximately 1-2 minutes.
	Turner's Reagent	Approximately 1-2 minutes.

TABLE 4

Recovery Methods

WebCode	Method	Time
ME2KEP	Turner's Reagent	~3 seconds
	Fry's Reagent	~3 seconds
	10% Nitric Acid	~3 seconds
	Etching Solution	~3 seconds
	10% NaOH	~3 seconds
	HCl	~3 seconds
MEKTZY	MagnaFlux	
	Turner's Reagent	10 minutes
MXEEVX	Acid Etch Method	10 minutes
MXY7VA	MagnaFlux	
	Fry's Reagent	30 seconds
	25% Nitric Acid	10 seconds
N42EVB	Fry's Reagent	One hour
	Turner's Reagent	One hour
NK8WPF	Fry's Reagent	6 minutes
NMXXV4	Fry's Reagent	5 minute applications for approximately 10 applications
NQ9ZPM	Davis Reagent	1 Min
	Turner's Reagent	1 Min
	Emery Cloth	
	Fry's Reagent	1 Min
NZD3W6	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	Three minutes
P4ECJT	Revealed to the non-destructive method or magnetic (Magnaflux)	Does not apply
P4YY7G	MagnaFlux	N/A
P6MP2U	Davis' Reagent	approx 30 min
	Turner's Reagent	approx 30 min
	Fry's Reagent	approx 45 min
P76KW3	Fry's Reagent	30 seconds to 1 minute
	Davis Reagent	30 seconds to 1 minute

TABLE 4

Recovery Methods		
WebCode	Method	Time
PED4BR	Chemical Etching:	
	Ferric & Acidic Ferric Chloride	6 seconds each
	Nitric Acid	6 seconds
	Davis, Turners, Fry's, Modified Turner	6 seconds each
	Bill Fort's	4 seconds
	Aluminum Solution	6 seconds
	Hydrochloric Acid	4 seconds
PM4TML	Turner's Reagent	~10 min
	Fry's Reagent	~10 min
	Nitric Acid 25%	~10 min
QFLVGE	Turner's Reagent	2 mins
	Fry's Reagent	10 mins
QM9GT7	Magnetic Particle Inspection (MPI)	
QYXH3L	Fry's Reagent	approximately 120 seconds total
R243QL	Fry's Reagent	3 times, 10 s each time
R6JUGE	Fry's/Turner's/Davis/Fort's	~5 seconds
	MagnaFlux	
RAVR3F	observation glass 10 minutes	
	Surface cleaning #400 y #600 40 minutes	
	Surface contact magnaflux y magnetic particles 10 minutes	
RGWRQP	Fry's Reagent	Approx 2hrs on and off swabbing
RJXABX	1- Modified Fry's Solution	02 Minutes
	2- 25% Nitric Acid Solution	30 seconds
	Above mentioned Method 1 and Method 2 were applied alternatively for 2 hrs	
RLN2VG	MagnaFlux	
RMZY47	MagnaFlux	
	Fry's Reagent	5 -15 swabs of 15 - 30 seconds each
	Acetone and Remoil after restoration	
T23MY8	Fry's Reagent	10 minutes
	Turner's Reagent	20 Minutes
	Davis' Reagent	20 Minutes
	25% Nitric Acid	20 Minutes
	Fry's Reagent	10 Minutes
	Turner's Reagent	20 minutes
	Davis' Reagent	20 Minutes

TABLE 4

Recovery Methods		
WebCode	Method	Time
TEQPHY	Fry's Reagent	90 minutes
TFJMP7	Acid Etch Method	total 6 hours
TWXBNY	MagnaFlux	NO
U2NZLH	Davis	~2 mins
	Fry's Reagent	~2 mins
	Turner's Reagent	~10 mins
	Fry's Reagent	~2 mins
UFEKGD	MagnaFlux	
	Frye's	swabbed
	MagnaFlux	
	Hubball's	swabbed
	MagnaFlux	
	Frye's	swabbed
UQTMVX	MagnaFlux	
	Fry's Reagent	2 min
UT2RED	Acid Etch Method	1-3 minutes
	Acidic Ferric Chloride	30-90 seconds
	10% Nitric Acid	1-2 minutes
	Modified Fry's Reagent	1-3 minutes
	MagnaFlux	5 minutes
UYNKL8	Mipro	15 min
	Acid Wazau	40 min
	Fry	5 min
VC3GUE	Davis Reagent	Approx. ten (10) minutes
	Turner's Reagent	Approx. ten (10) minutes
	Fry's Reagent	Approx. five (5) minutes
	Polishing (Scour Pad)	
	Davis Reagent	Approx. ten (10) minutes
	Turner's Reagent	Approx. ten (10) minutes
	Fry's Reagent	Approx. ten (10) minutes
VC748L	Magnetic method "Magnaflux"	5 minutes
VEDCHR	Fry's Reagent	
VMULE2	Magnetic Particle Inspection (MPI)	
W4PTLY	MagnaFlux	
	Magnet (non-electromagnet)	

TABLE 4

Recovery Methods		
WebCode	Method	Time
W66Y3A	Fry's Reagent	60 seconds
	25% Nitric Acid	30 seconds
	Fry's Reagent	120 seconds
	25% Nitric Acid	30 seconds
	Fry's Reagent	60 seconds
	25% Nitric Acid	30 seconds
W88XCG	Acid Etch Method	Less than one minute
	Fry's Reagent	Multiple Applications of varying times
	Turner's Reagent	Multiple Applications of varying times
	Griffin Reagent	Multiple Applications of varying times
	Acid Etch Method	Multiple Applications of varying times
	Propane Torch	Fifteen minutes
W9QJ9D	MagnaFlux	
	Fry's Reagent	5 minutes
WB97FQ	Fry's Reagent	~10 minutes
WFJ42T	Electro-magnetic	
WQ4JYT	Magnetic Particle Inspection (MPI)	
WVHUCW	MagnaFlux	
WYFKE3	MagnaFlux	
X896ZU	MagnaFlux	n/a
X8Q4B8	Fry's	7 mins
	Turner's	5 mins
	Fry's	2-3 mins
XCGDJJ	Fry's Reagent	no longer than a minute at a time
XFMTX3	Davis' Reagent	~10 minutes
	Turner's Reagent	~20 minutes
	Fry's Reagent	~28 minutes
	Turner's Reagent	~5 minutes
	Fry's Reagent	~2 minutes

TABLE 4

Recovery Methods		
WebCode	Method	Time
XJ62FB	MagnaFlux	
	Davis Reagent	1-5 min
	Turner's Reagent	1-5 min
	Fry's Reagent	1-5 min
	Nitric Acid	1 min
	7% hydrochloric acid	1 min
	10% hydrochloric acid	1 min
	MagnaFlux	
XJECME	MagnaFlux	N/A
	Additional sanding w/ 150, 400, 800 grit sand paper	N/A
	MagnaFlux	N/A
XPR46R	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	
	Turner's Reagent	
XQKQTP	Magnaflux (7HF & 9CM prepared baths)	
	Acid Etch- Fry's & Nitric Acid	Worked constantly 30-40 minutes
Y3K7RP	Fry's Reagent	~ 5 minutes
Y3URV2	Davis' Reagent	~ 3 minutes
	Turner's Reagent	~ 5 minutes
	Fry's Reagent	~ 20 minutes
Y4LRUX	Magnetic Particle Inspection (MPI)	
	polish	
	Davis Reagent	1 min
	Magnetic Particle Inspection (MPI)	
	Davis Reagent	1 min
	Magnetic Particle Inspection (MPI)	
	polish	
	Magnetic Particle Inspection (MPI)	
	Davis Reagent	1 min
	Turner's Reagent	1 min
	Fry's Reagent	1 min
	Davis Reagent	1 min
	Fry's Reagent	1 min
	Davis Reagent	1 min
Turner's Reagent	1 min	
Alternating Fry's/Davis x 5	1 min each	

TABLE 4

Recovery Methods		
WebCode	Method	Time
Y8NQAW	MagnaFlux	N/A
YFF9GD	Fry's Reagent	10 minutes
	MagnaFlux	
	Fry's Reagent	30 minutes
	MagnaFlux	
YH3LMB	Fry's Reagent	20 minutes
	MagnaFlux	
YHKUB6	Acid Etch Method	approx 10 min of application
YQ2B7Z	Acid Etch Method	nitric acid (25%), 2-3 second, multiple repeat applications
YXHTJ8	Fry's Reagent	swabbing the surface repeatedly
YXY8MB	MagnaFlux	
	Fry's Reagent	30 MINS
	Fry's	~1 second/swab stroke
	Fry's	~1 second/swab stroke
ZGPFK7	Fry's	~1 second/swab stroke
	Fry's	~10 seconds
	MagnaFlux	
	Acid Etch Method	25% Nitric Acid 10 minutes

Response Summary		Participants: 171
Recovery Methods		
Chemical Processing:	128	
Magnetic Processing:	81	
<p>Note: The total recovery methods used are not equivalent to the total number of participants because some participants used more than one recovery method.</p>		

Additional Comments

TABLE 5

WebCode	Additional Comments
2PXP7P	Polishing w/dremel, Fry's than 25% nitric acid....repeated these steps five times until serial number became visible.
3J7NHW	Acid etching was used to confirm the Magnaflux results.
496EV8	Did two rounds of sanding, polishing and magnaflux. There was uncertainty in the 2nd character in the serial number. One round of chemical etching was performed using Fry's reagent followed by Davis Reagent and finally Turner's Reagent. A final round of sanding and polishing was performed that was followed by Magnaflux to visualize the serial number. The serial number was not readily visible without the aid of magnaflux.
49XF8N	Missing character possibly an E based off characteristics and shape. Spent approximately 6 hours working on this and could not raise missing character.
6JWNAR	Best view of the s/n resulted when 25% nitric acid was applied, allowed to sit for ~1 minute, and then wiped away using a clean cotton swab.
6L7EYV	During chemical processing of the bar stock, several partial characters were visualized and documented; however, the characters were not developed to the point where a micro-verification was possible. Despite repeated sanding and reapplication of the chemical reagents, none of the characters could be definitively restored.
7KPRNK	Several rounds of chemical etch and polish combined with Magnaflux yielded a near complete set of characters. The second character appeared as a vertical bar, but no discernable serifs or shapes were observed. The most conservative conclusion was given; inclusion of all characters with a vertical bar.
8WV6JQ	The submitted sample was magnetic. A reaction was observed for each chemical etchant used.
94T9V2	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. Limitations: Serial Number: 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.
9JMQTC	The Aluminum bar stock with the characters: did not have characters of the same shape as the obliterated serial number.
9KHAXY	Application of chemical etching solutions was futile.

TABLE 5

WebCode	Additional Comments
9RKGG9	Difficult to photograph clearly. A series of horizontal lines were also visible with the restoration, possibly due to the obliteration process. those lines interfered with the restored characters making it difficult to interpret or observe horizontal features. The second character in the series of six was only a partial restoration and could not be fully interpreted however it had the appearance of an E, B or similar with a vertical line visible.
B4K9NW	The chemical method is not used because the electromagnetic method was able to obtain the restoration.
B8HPX7	A good positive result was obtained during the first attempt with Magnaflux method.
C4GWQT	Photographs were taken. I considered sanding the arching tooling marks on the surface farther down, but did not want to polish past the serial # mark.
C8ZQQZ	Fry's Reagent was applied 1 swab at a time for approximately 10-15 seconds. This was repeated approximately 20 times. One swab of 25% Nitric Acid was applied for 10-15 seconds.
CGMWD7	A good positive result was obtained during the first attempt and therefore only the electromagnetic process was applied.
D7KY6W	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. Limitations: Serial Number: 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.
EZURDF	I applied the Fry's Reagent and 25% Nitric Acid approximately 6 times each.
FB7GNQ	The material blackened/darkened after the application of Fry's reagent, requiring constant rinsing and changing of the applicator.
FFX337	Digital images were captured after recovery of the obliterated serial no.
FZP2DB	Initially applied Fry's prior to any polishing (no results), then alternated Fry's with polishing with sandpaper.
HP2HGG	I began processing with a visual examination. Next, the ground surface area was prepped with super fine grit sandpaper. Characters partly visible after first round of chemicals. Most characters were clearly visible after second round of chemicals. The second character in the sequence was only fully visible after third round of chemicals.
JPG9WF	Brought the obliterated SN# up with MagnaFlux very quickly and made photo's of SN#. In order to show a more permanent visible record of the restored SN# on Item 1 a acid etching solution was used after the MagaFlux process.

TABLE 5

WebCode	Additional Comments
LEMWEJ	Initial photos of Item 1 were taken along with some images as the process progressed. Final images taken at different exposures so that characters might be more easily seen.
LUK4E7	The restored characters at the beginning and the end of the serial number were easy to read and remained stable during the processing while the restored characters between them lost detail as the examination progressed.
P4ECJT	The results obtained are set by digital photography. The characters of the result obtained are similar in morphology (Test source) to the printed samples of the test N°. 18-5251 - (aluminum standard).
RAVR3F	Documents results with photography.
RGWRQP	Hard to photograph restoration of characters. The second and third characters appeared to have had more material removed or lighter stamping resulting in the second character unable to be restored or interpreted. An indication of the metal would assist in the prescribed method being used, Steel= Fry's Cast ,Heat would be used.
RJXABX	2nd character (from left to right) was partially recovered and its shape was like "L" with a little forward extension on top end. Keeping in view this partially restored alphabet and provided "Aluminium Standard" the character may be B, D or E.
T23MY8	Each chemical was applied using a cotton tipped swab in a repetitive motion from left to right.
VC3GUE	No preparation of the sample was done prior to applying chemicals to it. However, after attempts at recovery using chemicals, scour pad polishing was done to smooth the sample before more attempts at recovery using chemicals were made.
VC748L	Document results with photography.
YFF9GD	All characters showed up well except for the 2nd character. It is most likely an E but could possibly be a B. It never showed up really clear like the other characters, the bottom looks more straight like an E but could not be positive.
YHKUB6	for interpretation we have assumed that only the characters used in the Al Std were available.
ZGPFK7	During the magnetic process, two digits could not be confirmed with confidence. Acid etching was applied to try and get better results. The acid etching process recovered all the digits without any doubt.

-End of Report-
(Appendix may follow)

Appendix: Data Sheet

Collaborative Testing Services ~ Forensic Testing Program

Test No. 18-5251: Serial Number Restoration

DATA MUST BE RECEIVED BY September 10, 2018 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 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 10, 2018* 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

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. **18-5251: Serial Number Restoration**

This release page must be completed and received by **September 10, 2018** 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

ANAB Certificate No. _____

(Include ASCLD/LAB Certificate here)

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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