



## Serial Number Restoration Test No. 17-5250 Summary Report

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This test was sent to 330 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 296 participants (90% 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 (C472B5).

### **SAMPLE PREPARATION:**

Each sample set contained a piece of stainless steel bar stock that was stamped with 6 characters (C472B5). 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:**

Three predistribution laboratories restored the obliterated six character serial number and reported "C472B5". All three laboratories used a chemical restoration method for recovery.

## **Summary Comments**

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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 (C472B5). (Refer to Manufacturer's Information for preparation details.)

Of the 296 responding participants in Table 1: "Recovered Characters", 286 (97%) recovered the six characters consistent with the Manufacturer's Information. Eight participants restored five of the six characters and one participant restored four of the six characters characters. One participant did not report any single character consistent with the Manufacturer's Information. It was noted that several of these 10 participants reported characters that were different from, but similar in shape to, the expected characters.

In Table 3: "Preparation Methods", the majority of participants used polishing, sanding or visual methods 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

<b>WebCode</b>	<b>Character 1</b>	<b>Character 2</b>	<b>Character 3</b>	<b>Character 4</b>	<b>Character 5</b>	<b>Character 6</b>
26WUXY	C	4	7	2	B	5
2BGRQT	C	4	7	2	B	5
2EFJ84	C	4	7	2	B	5
2GLVCK	C	4	7	2	B	5
2JBZ9X	C	4	7	2	B	5
2JDPBA	C	4	7	2	B	5
2PGVQD	C	4	7	2	B	5
2R4JZR	C	4	7	2	B	5
2WENY8	C	4	7	2	B	5
36AMAT	C	4	7	2	B	5
3A4KXJ	C	4	7	2	B	5
3CPQVL	C	4	7	2	B	5
3EVXCT	C	4	7	2	B	5
3HV7JN	C	4	7	2	B	5
3TRCCM	C	4	7	2	B	5
3UNTMX	C	4	7	2	B	5
3Y2DV6	C	4	7	2	B	5
42NHUU	C	4	7	2	B	5
49JH9M	C	4	7	2	B	5
4M4R6Z	C	4	7	2	B	5
4NJ39Y	C	4	7	2	B	5
4UHZ72	C	4	7	2	B	5
4WAMCC	C	4	7	2	B	5

TABLE 1

<b>WebCode</b>	<b>Character 1</b>	<b>Character 2</b>	<b>Character 3</b>	<b>Character 4</b>	<b>Character 5</b>	<b>Character 6</b>
62W4TU	C	4	7	2	B	5
62ZGN4	C	4	7	2	B	5
64RBNT	C	4	7	2	3	5
6DR98M	C	4	7	2	B	5
6E36FX	C	4	7	2	B	5
6GTAA6	C	4	7	2	B	5
6JE32Y	C	4	7	2	B	5
6MKGRD	C	4	7	2	B	5
6NDAR3	C	4	7	2	B	5
6RTW3M	C	4	7	2	B	5
6XXMHL	C	4	7	2	B	5
74GDGL	C	4	7	2	B	5
79FHJ7	C	4	7	2	B	5
7B2B8U	C	4	7	2	B	5
7CANPW	C	4	7	2	B	5
7GCAUL	C	4	7	2	B	5
7KQY6H	C	4	7	2	B	5
7LGDFD	C	4	7	2	B	5
7PGC4K	C	4	7	2	B	5
7QVVQ4	C	4	7	2	B	5
8ALMAZ	C	4	7	2	B	5
8BVJQX	C	4	7	2	B	5
8CAWLM	C	4	7	2	B	5
8CDFAP	C	4	7	2	B	5

TABLE 1

<b>WebCode</b>	<b>Character 1</b>	<b>Character 2</b>	<b>Character 3</b>	<b>Character 4</b>	<b>Character 5</b>	<b>Character 6</b>
8MTDAM	C	4	7	2	B	5
8PYXXM	C	4	7	2	B	5
8QBGZ6	C	4	7	2	B	5
9G2M3H	C	4	7	2	B	5
9L9ZYV	C	4	7	2	B	5
9NHYPK	C	4	7	2	B	5
9PEGHK	C	4	7	2	B	5
9V37W3	C	4	7	2	B	5
9X3EXR	C	4	7	2	B	5
9X7RU2	C	4	7	2	B	5
9YYRLK	C	4	7	2	B	5
9ZAP2M	C	4	7	2	B	5
A2Q2JR	C	4	7	2	B	5
A7JZXN	C	4	7	2	B	5
A8U687	C	4	7	2	B	5
A92KFW	C	4	7	2	B	5
AACBHL	C	4	7	2	B	5
ABMBG2	C	4	7	2	B	5
ACHW7L	C	4	7	2	B	5
ADX7AK	C	4	7	2	B	5
AE6BY3	C	4	7	2	B	5
AFKUJZ	C	4	7	2	B	5
AFMDUH	C	4	7	2	B	5
AGDTTR	C	4	7	2	B	5

TABLE 1

<b>WebCode</b>	<b>Character 1</b>	<b>Character 2</b>	<b>Character 3</b>	<b>Character 4</b>	<b>Character 5</b>	<b>Character 6</b>
AGF7PZ	C	4	7	2	B	5
AJ7D8C	C	4	7	2	B	5
AQH NZ4	C	4	7	2	B	5
AUX9WQ	C	4	7	2	8	5
B3DY9B	C	4	7	2	B	5
B47VWJ	C	4	7	2	B	5
B79ZYQ	C	4	7	2	B	5
BA7LQU	C	4	7	2	B	5
BCFJ9H	C	4	7	2	B	5
BE2BAL	C	4	7	2	B	5
BJYMFK	C	4	7	2	B	5
BMY3K2	C	4	7	2	B	5
BQY8HF	C	4	7	2	B	5
BUME7J	C	4	7	2	B	5
BZKFUP	C	4	7	2	B	5
BZNTPY	C	4	7	2	B	5
C3QZHQ	C	4	7	2	B	5
C9XJQG	C	4	7	2	B	5
CA9JRG	C	4	7	2	B	5
CCV82W	C	4	7	2	B	5
CJQA2M	C	4	7	2	B	5
CKUMWV	C	4	7	2	B	5
CMWL73	C	4	7	2	B	5
CQELM4	C	4	7	2	B	5

TABLE 1

<b>WebCode</b>	<b>Character 1</b>	<b>Character 2</b>	<b>Character 3</b>	<b>Character 4</b>	<b>Character 5</b>	<b>Character 6</b>
CTD9RR	C	4	7	2	B	5
CUER7G	C	4	7	2	B	5
CZ4AKR	C	4	7	2	B	5
D97ZCT	C	4	7	2	B	5
DAL9QN	C	4	7	2	B	5
DEFAR3	C	4	7	2	B	5
DFQAPW	C	4	7	2	B	5
DG23GP	C	4	7	2	B	5
DJ8N7B	C	4	7	2	B	5
DK6XZT	C	4	7	2	B	5
DVJTFR	C	4	7	2	B	5
DWGAHG	C	4	7	2	B	5
E6Q2KK	C	4	7	2	B	5
EB8N6N	2 or 7	4 or A	3 or 5	A or N		
EBH97D	C	4	7	2	B	5
EFAFNM	C	4	7	2	B	5
EKZPWY	C	4	7	2	B	5
EX6WMP	C	4	7	2	B	5
F8B8HL	C	4	7	2	B	5
FBU8VG	C	4	7	2	B	5
PDFZNB	C	4	7	2	B	5
FF2X28	C	4	7	2	B	5
FHTRZX	C	4	7	2	B	5
FK24JK	C	4	7	2	B	5



TABLE 1

<b>WebCode</b>	<b>Character 1</b>	<b>Character 2</b>	<b>Character 3</b>	<b>Character 4</b>	<b>Character 5</b>	<b>Character 6</b>
FNJ42K	C	4	7	2	B	5
FQKJXP	C	?	7	2	B	5
FQL298	C	4	7	2	B	5
FQL3CD	C	4	7	2	B	5
FT9TAC	C	4	7	2	B	5
FWE74W	C	4	7	2	B	5
G2HGKP	C	4	7	2	B	5
G44AMJ	C	4	7	2	B	5
G9UXRP	C	4	7	2	B	5
GDVRY8	C	4	7	2	B	5
GFHHZB	C	4	7	2	B	5
GH8MWP	C	4	7	2	B	5
GHJJ3U	C	4	7	2	B	5
GJW7K9	C	4	7	2	B	5
GMEBBQ	C	4	7	2	B	5
GV8LKL	C	4	7	2	B	5
H8KXJ2	C	4	7	2	B	5
HCTLW4	C	4	7	2	8 OR B	5
HFHQUG	C	4	7	2	B	5
HG79KG	C	4	7	2	B	5
HL6J2A	C	4	7	2	B	5
HLKW8Y	C	4	7	2	B	5
HLZ7A8	C	4	7	2	B	5
HNQA3E	C	4	7	2	B	5

TABLE 1

<b>WebCode</b>	<b>Character 1</b>	<b>Character 2</b>	<b>Character 3</b>	<b>Character 4</b>	<b>Character 5</b>	<b>Character 6</b>
HQWMVE	C	4	7	2	B	5
HTHGM9	C	4	7	2	B	5
J4HHNJ	C	4	7	2	B	5
JB6A9	C	4	7	2	B	5
JNLAFJ	C	4	7	2	B	5
JNPMCT	C	4	7	2	B	5
JTWDGJ	C	4	7	2	B	5
JWYCPR	C	4	7	2	B	5
K3ZYUC	C	4	7	2	B	5
K7G6T8	C	4	7	2	B	5
KAYADN	C	4	7	2	B	5
KC8EZK	C	4	7	2	B	5
KCL2ET	C	4	7	2	B	5
KKHR4A	C	4	7	2	B	5
KNEJQD	C	4	7	2	B	5
KNG32U	C	4	7	2	B	5
KQ4QBA	C	4	7	2	B	5
KUL2AY	C	4	7	2	B	5
KW9UYM	C	4	7	2	B	5
KZQV64	C	4	7	2	B	5
L4QBE4	C	4	7	2	B	5
L7DYNH	C	4	7	2	B	5
LAGLP2	C	4	7	2	B	5
LCM7C2	C	4	7	2	B	5

TABLE 1

<b>WebCode</b>	<b>Character 1</b>	<b>Character 2</b>	<b>Character 3</b>	<b>Character 4</b>	<b>Character 5</b>	<b>Character 6</b>
LF67U3	C	4	7	2	B	5
LHQA3Z	C	4	7	2	B	5
LHRWV8	C	4	7	2	B	5
LKDZ46	C	4	7	2	B	5
LKWKDH	C	4	7	2	B	5
LQLZ2P	C	4	7	2	B	5
LTWXGR	C	4	7	2	B	5
LWV9B7	C	4	7	2	B	5
LWBRXP	C	4	7	2	B	5
LWV9ED	C	4	7	2	B	5
LXHVCB	C	4	7	2	B	5
M6KGD9	C	4	7	2	B	5
M6W6N9	C	4	7	2	B	5
MB848E	C	4	7	2	B	5
MH4786	C	4	7	2	(B,8)	5
MKPW9A	C	4	7	2	B	5
MQG22D	C	4	7	2	B	5
MVR7Y8	C	4	7	2	B	5
MYRCHJ	C	4	7	2	B	5
N2DJG7	C	4	7	2	B	5
N2VJAB	C	4	7	2	B	5
N8HGQB	C	4	7	2	B	5
NANUJ7	C	4	7	2	B	5
NHKLUK	C	4	7	2	B	5

TABLE 1

<b>WebCode</b>	<b>Character 1</b>	<b>Character 2</b>	<b>Character 3</b>	<b>Character 4</b>	<b>Character 5</b>	<b>Character 6</b>
NL26XN	C	4	7	2	B	5
NNTXWD	C	4	7	2	B	5
NY9PKM	C	4	7	2	B	5
P2UUTK	C	4	7	2		5
P4FMLE	C	4	7	2	B	5
PEJTKM	C	4	7	2	B	5
PELLFA	C	4	7	2	B	5
PFVTGG	C	4	7	2	B	5
PHGJHL	C	4	7	2	B	5
PJU4E3	C	4	7	2	8	5
PP38MP	C	4	7	2	B	5
PPDA83	C	4	7	2	B	5
PTVEXK	C	4	7	2	B	5
PURUAH	C	4	7	2	B	5
PV3YJZ	C	4	7	2	B	5
PZFG6M	C	4	7	2	B	5
Q3DH3Z	C	4	7	2	B	5
Q3X7PC	C	4	7	2	B	5
Q6KXQG	C	4	7	2	B	5
QBC8W9	C	4	7	2	B	5
QC6NJ4	C	4	7	2	B	5
QD24VZ	C	4	7	2	B	5
QEDYF8	0	4	7	2	8	5
QF4EFG	C	4	7	2	B	5

TABLE 1

<b>WebCode</b>	<b>Character 1</b>	<b>Character 2</b>	<b>Character 3</b>	<b>Character 4</b>	<b>Character 5</b>	<b>Character 6</b>
QF6WPY	C	4	7	2	B	5
QHTKZE	C	4	7	2	B	5
QJ67WU	C	4	7	2	B	5
QMATD6	C	4	7	2	B	5
QRKWEF	C	4	7	2	B	5
QVGH6H	C	4	7	2	B	5
QVYMMG	C	4	7	2	B	5
QVYQUD	C	4	7	2	B	5
R4TYCH	C	4	7	2	B	5
RAFYG3	C	4	7	2	B	5
RCKGP7	C	4	7	2	B	5
RGX8ZR	C	4	7	2	B	5
RHAY3G	C	4	7	2	B	5
RPM6GZ	C	4	7	2	B	5
RRCC2W	C	4	7	2	B	5
RXMXQ	C	4	7	2	B	5
T49TE6	C	4	7	2	B	5
T9XEYC	C	4	7	2	B	5
TL7TM4	C	4	7	2	B	5
TLHU3B	C	4	7	2	B	5
TNQ3BV	C	4	7	2	B	5
TREAZY	C	4	7	2	B	5
TW8DT3	C	4	7	2	B	5
U3Q4NW	C	4	7	2	B	5

TABLE 1

<b>WebCode</b>	<b>Character 1</b>	<b>Character 2</b>	<b>Character 3</b>	<b>Character 4</b>	<b>Character 5</b>	<b>Character 6</b>
U6FA9U	C	4	7	2	B	5
UE3D8F	C	4	7	2	B	5
UGMFYL	C	4	7	2	B	5
UJZPCT	C	4	7	2	B	5
UK6LA3	C	4	7	2	B	5
UMVTUY	C	4	7	2	B	5
UR72ZA	C	4	7	2	B	5
URMXN4	C	4	7	2	?	5
UUV6TG	C	4	7	2	B	5
UVQJNM	C	4	7	2	B	5
UZY6AY	C	4	7	2	B	5
V3HKWC	C	4	7	2	B	5
V9QRV3	C	4	7	2	B	5
VGMMW8	C	4	7	2	B	5
VLEQPC	C	4	7	2	B	5
VR2UGE	C	4	7	2	B	5
VUMM63	C	4	7	2	B	5
VUQ22C	C	4	7	2	B	5
VUUNG4	C	4	7	2	B	5
VZFPD9	C	4	7	2	B	5
W3JKT6	C	4	7	2	B	5
W64KWR	C	4	7	2	B	5
W8UNPY	C	4	7	2	B	5
WK2W8G	C	4	7	2	B	5

TABLE 1

<b>WebCode</b>	<b>Character 1</b>	<b>Character 2</b>	<b>Character 3</b>	<b>Character 4</b>	<b>Character 5</b>	<b>Character 6</b>
WKLDMJ	C	4	7	2	B	5
WL92WY	C	4	7	2	B	5
WM6G7B	C	4	7	2	B	5
WMJ3HX	C	4	7	2	B	5
WYZG7T	C	4	7	2	B	5
WZ9XWC	C	4	7	2	B	5
X3GAED	C	4	7	2	B	5
XB8VHQ	C	4	7	2	B	5
XDDF7Q	C	4	7	2	B	5
XFZVX8	C	4	7	2	B	5
XGVFMR	C	4	7	2	B	5
XJ2ZDD	C	4	7	2	B	5
XJNK67	C	4	7	2	B	5
XLB2HK	C	4	7	2	B	5
XM8GUG	C	4	7	2	B	5
XNTAJ6	C	4	7	2	B	5
XRE69J	C	4	7	2	B	5
XX23QE	C	4	7	2	B	5
XXLH4V	C	4	7	2	B	5
Y4NZ6U	C	4	7	2	B	5
YDB2GW	C	4	7	2	B	5
YGBAPD	C	4	7	2	B	5
YJHRNA	C	4	7	2	B	5
YPMH39	C	4	7	2	B	5

TABLE 1

<b>WebCode</b>	<u>Character 1</u>	<u>Character 2</u>	<u>Character 3</u>	<u>Character 4</u>	<u>Character 5</u>	<u>Character 6</u>
YREC76	C	4	7	2	B	5
YVCXT2	C	4	7	2	B	5
YW22L9	C	4	7	2	B	5
YWHFRW	C	4	7	2	B	5
YZA6KQ	C	4	7	2	B	5
Z4GFQP	C	4	7	2	B	5
Z4KZFD	C	4	7	2	B	5
Z7A4CQ	C	4	7	2	B	5
ZXUC28	C	4	7	2	B	5

<b>Response Summary</b>						Participants: <b>296</b>
	<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	C	4	7	2	B	5
Number	294	295	295	295	287	295
Percent	99.3%	99.7%	99.7%	99.7%	97.0%	99.7%



# Conclusions

TABLE 2

WebCode	Conclusions
26WUXY	The obliterated number on Item 1 was polished and chemically restored to reveal the serial number C472B5.
2BGRQT	The obliterated serial number on Item 1 bar stock was restored and interpreted as "C472B5".
2EFJ84	Item #1 was received with a suspected obliterated serial number. Attempts to restore the serial number with polishing and chemical processing successfully restored the serial number to read, "C472B5".
2GLVCK	[No Conclusions Reported.]
2JBZ9X	The stainless steel bar, Item 1, was examined. The bar exhibited metal removal consistent with machining. Using standard restoration techniques, the serial number C472B5 was restored.
2JDPBA	The serial number on the piece of metal was mechanically and chemically treated and restored to read C472B5.
2PGVQD	Visual examination and chemical treatment of the serial number area on the bar stock, Item 1A, reveals the following number: C472B5. Item 1B was inspected to verify and document contents. No analysis was performed on the item listed.
2R4JZR	Using chemical etching techniques the serial number was restored to read C472B5. The aluminum bar standard was not further examined.
2WENY8	Item 1 submitted with an obliterated serial number due to grinding and filing on its surface. Restored in the laboratory through the use of chemical etching and magnetic particle inspection to read "C472B5".
36AMAT	As a result of an attempted obliterated number restoration the following characters were observed: "C472B5".
3A4KXJ	The obliterated serial number on Item 1 was restored and reads: C 4 7 2 B 5.
3CPQVL	Examination and restoration of the obliterated area on Item 1 (a piece of stainless steel bar stock with suspected obliterated serial number) revealed the following characters: "C 4 7 2 B 5"
3EVXCT	The submitted bar stock with the obliterated serial number was marked Q1 for identification. Q1 was polished and chemically processed. The serial number restoration revealed the following C472B5.
3HV7JN	Serial number restoration revealed the number C472B5.
3TRCCM	The restoration techniques applied allowed identification of the previously deleted serial number "C472B5"
3UNTMX	The serial number on Item 1.1 was recovered using mechanical polishing and chemical etching techniques and was found to be: C472B5.
3Y2DV6	The recovering methodology lead to the following revealed sequence: C472B5
42NHUU	Using standard laboratory restoration techniques, the obliterated serial number on Item 1 was restored to read C 4 7 2 B 5.
49JH9M	Examination of Item #1 revealed an obliterated area. Standard serial number restoration techniques revealed the following characters "C472B5."
4M4R6Z	Based on the above examination and findings, I am of my opinion that the original serial number on a piece of stainless steel bar stock "Item 1" is "C472B5".
4NJ39Y	The examination and processing of the obliterated serial number on the Item 1 piece of metal was restored to read "C472B5".

TABLE 2

WebCode	Conclusions
4UHZ72	The serial number of stainless steel bar stock described in item 1, was restored and corresponds to: C472B5.
4WAMCC	Visual examination and chemical treatment of the serial number area on the bar stock, Item 1, reveal the following number: C 4 7 2 B 5. The aluminum standard was inspected to verify and document contents. No analysis was performed on the item listed.
62W4TU	The alphanumeric sequence revealed in the piece of questioned aluminum identified as Test No. 17-5250 Item1 corresponds to C472B5.
62ZGN4	Serial number obliterated by abrasion. Serial number restored using chemical etching and reads: "C472B5".
64RBNT	Item #1 (stainless steel bar stock) was examined on 3/14/2017 and found to have an obliteration from an end mill type tool. Using laboratory chemical restoration methods, serial number C47235 was recovered from the obliterated area.
6DR98M	The obliterated area of the block (exhibit 1) was chemically processed and was restored to "C472B5".
6E36FX	The serial number has been restored successfully and appeared clearly and entirely.
6GTAA6	The suspected obliterated serial number has been completely restored and the number is : C472B5
6JE32Y	After application of the electro magnetic process, I determined the serial number of the steel plate as C472B5.
6MKGRD	A forensic restoration restored previously stamped characters which read: C472B5.
6NDAR3	The work on the milled serial number of the stainless steel bar identified as "Item 1" has given the following result : C472B5
6RTW3M	Standard laboratory procedures for restoring characters stamped in metal have been employed on the obliterated area. The restored characters are "C472B5"
6XXMHL	Serial number restoration revealed the number C472B5.
74GDGL	Examination of Item 1 revealed the presence of a defaced area. Item 1 was physically and magnetically processed. The serial number was restored as: C472B5
79FHJ7	The obliterated area was cleaned, polished, and chemically etched. The following full serial number was restored: C472B5.
7B2B8U	The alphanumeric sequence disclosed in the metal part under study ("Test No. 17-5250 Item 1"), is in concordance with the reference material provided for comparison ("Aluminum Standard Test 17-5250").
7CANPW	Upon electrochemical treatment on the filed surface, the original number was restored and read as C472B5.
7GCAUL	Serial number restoration techniques were applied to Item 1 with the following number being developed: C 4 7 2 B 5.
7KQY6H	The metal Bar Stock was physically and chemically processed. Its serial number was restored to read: C472B5 ON 2/2/2017.
7LGDFD	Using the acid-etch method, the number on the steel bar stock (Item 1) was completely restored as " C 4 7 2 B 5 ". No further examinations performed on the aluminum standard (Item 0001-AB).
7PGC4K	Serial number restoration revealed the number C472B5.
7QWQ4	Using standard laboratory techniques, the obliterated serial number on Item 001-01 was restored to read "C472B5". No examination performed on the Item 001-02 aluminum standard.

TABLE 2

WebCode	Conclusions
8ALMAZ	Serial number obliterated (deeply abraded), restored using chemical etching process. CTS number etched on MB1 for identification.
8BVJQX	Based on the above examination and findings, I am of the opinion that the original serial number on the piece of stainless steel bar stock 'Item 1' is C472B5.
8CAWLM	Using laboratory chemical restoration procedures, the number on the questioned block was restored to read: C472B5.
8CDFAP	The serial number on the Stainless steel bar, item 1.1, was restored to read C472B5. Item 1.2 was documented but not analyzed.
8MTDAM	The stainless steel bar stock (Exhibit 1) had a striated toolmark consisting of many uniform, continuous arcs. This toolmark was located in the approximate center of the bar stock and was likely produced by a milling process. This area was polished and chemically processed. The serial number "C472B5" was observed after processing.
8PYXXM	Exhibit 1 had an area of obliteration in the middle of the bar stock across its width. The obliteration appeared to be accomplished by a rotating cutter such as an end mill. The toolmarks may have value for identification purposes and were preserved in a cast designated as 1T1. The area was processed and the serial number was fully restored to read: C472B5.
8QBGZ6	After application of the electro-acid etching process I determined the serial number of item-1 to be C472B5.
9G2M3H	The serial number was fully restored using chemical restoration techniques. the serial number was determined to be C472B5.
9L9ZYV	On the examination, I found that there were filing mark on the stainless steel bar stock and no numbers were observed. On electrochemical treatment, a set of number read as "C472B5" was restored. Hence, I am of the opinion that the numbers of the stainless steel bar stock were tempered and the original numbers were "C472B5"
9NHYP	Using standard laboratory restoration techniques the obliterated serial number on Item 1 was restored to read " C472B5".
9PEGHK	Examination of Item 1 revealed an obliterated area. Standard chemical restoration procedures were utilized and the characters "C472B5" were restored.
9V37W3	After application of the electro-acid process, I found the number of Item 1 to be C472B5.
9X3EXR	AL the conclusión of the analysis it was determined that the alphanumeric sequence of the piece of questioned metal was altered. After the sequence matching the characteristics evaluated in the reference material was revealed.
9X7RU2	The obliterated serial number was chemically processed and restored to read "C472B5"
9YYRLK	The defaced serial number on the piece of stainless steel bar stock (item 1) was determined to be "C472B5".
9ZAP2M	Attempts to restore the obliterated serial number of Lab Item 1 were successful. The restored serial number is C472B5.
A2Q2JR	The obliterated serial number of Item #1 was chemically processed and found to be "C472B5".
A7JZXN	The serial number on the submitted plate (Item 1) was restored to read "C472B5".
A8U687	Visual examination and chemical treatment of the serial number area on the bar stock Item 1A, reveal the following number: C472B5 Item 1B inspected to verify and document contents. No analysis was performed on the item listed.

TABLE 2

WebCode	Conclusions
A92KFW	One piece of stainless steel barstock (2 3/4" x 1") submitted with a suspected obliterated serial #. Approximately 1" x 1" area of surface defaced through grinding. Serial # C472B5 restored using magnetic particle inspection process. Scribed "CTS 17-5250" by examiner for identification purposes.
AACBHL	In the piece of stainless steel bar stock with suspected obliterated serial number, that comes identified as "Test No. 17-5250 Ítem 1", It is submitted to the Restoration of Serial Numbers Procedure; this alphanumeric serie was obtained: C472B5.
ABMBG2	3. On 2017-02-15 during the performance of my official duties I received a sealed evidence bag with number PA5001609772 from Case Administration of the Ballistics Section containing the following: 3.1 One (1) piece of stainless steel bar stock of which the serial number was obliterated marked by me "61736/17A". 4. The intention and scope of this forensic examination comprise of the following: 4.1 Techniques associated with the recovering and restoration processes of obliterated alpha-numeric figures on metal. 5. After application of the electro-acid etching process and electro-magnetic process, I determined the serial number on the exhibit mentioned in paragraph 3.1 as C472B5. 6. The conclusions arrived at were based on facts, established by means of an examination and process which require a knowledge and skill in Forensic Ballistics.
ACHW7L	During the restoration of the serial number of Ítem 1, we identified six alphanumeric characters: "C472B5", which correspond to the type of stamping used by the manufacturer Collaborative Testing Services (CTS).
ADX7AK	Serial number restoration techniques were applied to Ítem #1 (block of metal). The serial number was determined to be C 4 7 2 B 5.
AE6BY3	After application of the Electro Magnetic and Electro-Acid Etching Process, I determined the serial number of the exhibit mentioned in 3.1 possibly as (with the fourth and fifth digits not legible) C472B5.
AFKUJZ	The serial number of the stainless steel bar stock, Ítem SNR1, was determined to be C472B5.
AFMDUH	Examination of Ítem #1 revealed an obliterated area. Standard serial number restoration techniques revealed the characters "C472B5".
AGDTTR	Using standard laboratory restoration techniques it was determined that the obliterated serial number on Ítem 001-01 was restored to read: C 4 7 2 B 5
AGF7PZ	Examination and restoration of the obliterated area on Ítem 1 (stainless steel barstock) revealed the following characters interpreted as "C472B5".
AJ7D8C	The surface of the metal was prepared and then treated with a chemical etchant, resulting in the following letter/number combination being recovered: C472B5
AQHNZ4	The serial number on the submitted metal block, Ítem 1, was completely obliterated. Chemical etching was performed and the serial number was restored to "C 4 7 2 B 5".
AUX9WQ	The steel bar was received with a suspected obliterated serial number. Restoration was attempted and the results were positive. The final interpretation of the restored serial number is "C47285". Six (6) photographs were taken during the restoration process.
B3DY9B	Following an Magnetic Particle Inspection (MPI) and chemical restoration process, I restored the serial number on the Stainless Steel Bar Stock to be C472B5".
B47VVJ	The obliterated area of Exhibit 1 was visually examined and chemically processed. The characters were restored and appeared as follows: C472B5.
B79ZYQ	Examination and chemical processing of Ítem #1 restored the serial number characters "C472B5".
BA7LQU	Examination and chemical processing of the firearm item #1 restored the original obliterated serial number which was determined to be "C472B5". A search of the NCIC stolen gun files by serial number "C472B5" revealed no matching entries.

TABLE 2

WebCode	Conclusions
BCFJ9H	1) The obliterated area on Exhibit 1 (Metal Bar) was visually examined, magnetically processed, and chemically processed. The characters were restored and appeared as follows: C472B5.
BE2BAL	When the piece of metal is tested, it reveals six alpha-numeric characters, the following serial number was the one found in the questioned object: "C472B5".
BJYMFK	As a result of an attempted obliterated number restoration the following characters were observed: C472B5.
BMY3K2	During the examination of the stainless steel bar mentioned, I found the serial number C472B5.
BQY8HF	The Item #1 stainless steel bar stock was physically and chemically processed. Its serial number was restored to read: C 4 7 2 B 5.
BUME7J	The serial number on item 1 was restored to C472B5.
BZKFUP	Using standard laboratory restoration techniques, the obliterated serial number on item 001-01 was restored to read C472B5. The aluminum standard in item 001-02 was used for reference purposes.
BZNTPY	Restoration of obliterated stamped markings was performed on the questioned surface of Item 1, and the restored serial number was found to be "C472B5".
C3QZHQ	The obliterated serial number on the Item 001-01 bar stock was restored to read C472B5. No examinations were performed using the 001-02 aluminum standard.
C9XJQG	Examination of Item 1 revealed an obliterated area on the stainless steel bar stock. Standard chemical restoration techniques revealed the following characters:"C472B5".
CA9JRG	The defaced serial number of Item 1 was physically, magnetically and chemically processed to read: "C472B5".
CCV82W	After application of the electromagnetic process, I determined the serial number possibly as C472B5 on the metal plate.
CJQA2M	After application of the chemical process on the stainless steel bar received, I determined the serial number to be: C472B5.
CKUMWV	Obliterated serial number, which has been fully restored, is composed of six characters : C472B5
CMWL73	Visual examination and chemical treatment of the serial number area on the barstock, Item 1A, reveal the following number: C472B5 Item 1B was inspected to verify and document contents. No analysis was performed on the item listed.
CQELM4	Physical processing of the submitted stainless steel bar stock restored the obliterated, original serial number to read C472B5.
CTD9RR	The obliterated serial number was restored to read C472B5.
CUER7G	The serial number on item 1 was restored to C 4 7 2 B 5
CZ4AKR	The serial number on Item 1 was restored and found to be C472B5.
D97ZCT	The restoration of the area presenting alteration was done and it was possible to achieve the complete restoration where the alphanumeric sequence C472B5 was observed.
DAL9QN	Item 1 was microscopically examined. The obliterated number on Item 1 was polished and chemically restored to reveal the serial number C472B5.
DEFAR3	Visual examination and chemical treatment of the serial number area on the steel plate, Item 1, reveal the following number: C472B5.

TABLE 2

WebCode	Conclusions
DFQAPW	Restoration of the obliterated serial number was performed on the questioned surface of the stainless steel bar stock labelled "Item 1". The restored serial number was found to have six characters - "C472B5".
DG23GP	Upon electrochemical treatment on the filed surface, the number C472B5 was restored. Based on my findings, I am of the opinion that C472B5 was the original number stamped on the surface that was subsequently obliterated.
DJ8N7B	The serial number on the above listed evidence was restored to read C472B5.
DK6XZT	Through serial number restoration process the following was determinate: The serial number of the stainless steel bar stock described in the item 1, was restored and correspond to C472B5.
DVJTFR	Chemical treatment of the obliterated area on CTS Item 1 revealed the following number: C472B5.
DWGAHG	Serial number restoration techniques were applied to the submitted portion of bar stock (item 1). The serial number was determined to be C472B5.
E6Q2KK	Examination of Item #1 revealed one (1) portion of aluminum bar stock with reported serial number obliterated. Using standard laboratory restoration techniques, an attempt was made to restore the serial number on Item #1 with the following results: Serial Number: C 4 7 2 B 5 was restored to Item #1.
EB8N6N	The serial number was partially report to read 2 or 7, 4 or A, 3 or 5, A or N, -, -. Due to pitting in the material beginning or appearing no further processing done.
EBH97D	The serial number on item 1 was restored to C472B5.
EFAFNM	The obliterated serial number on the stainless steel bar stock, item 1, was restored to C472B5. The stainless steel bar stock was examined. The location of the suspected obliterated serial number, the middle of the bar stock, was obliterated by a grinding type tool. Using standard restoration techniques, the obliterated area was sanded and treated with chemicals.
EKZPWY	After a visual inspection, the area where the serial number had been removed was determined to be non-magnetic. The area was subjected to sanding with a sanding drum on an electric Dremmel tool and hand sanding/polishing with varying grades of dry sandpaper. The area was then treated with Ferric Chloride Solution, Acidic Ferric Chloride Solution. Two photographs were taken during the processing.
EX6WMP	I found the serial number to have been obliterated by filing. On electrochemical treatment, I developed the number 'C472B5'. I am of the opinion that the original serial number was C472B5.
F8B8HL	The obliterated serial number of Item #1 was chemically restored to read C472B5.
FBU8VG	Examination of Item 1 revealed an obliterated area on the front. Standard restoration techniques revealed the following characters: "C472B5".
FDFZNB	The stainless steel bar stock (item #1) was physically and chemically processed. Its serial number was restored to read: C472B5
FF2X28	As a result of an attempted obliterated number restoration the following characters were observed: C472B5
FHTRZX	The submission #001-1 metal bar was examined + photographed before polishing the obliterated surface with a Dremel Tool. Magnetic methods were used to restore the serial #. The serial # was restored to read C472B5.
FK24JK	The serial number of Item 1 as restored is C472B5.
FNJ42K	The obliterated serial number on Item 1 was polished & chemically restored to reveal the serial number C472B5.

TABLE 2

WebCode	Conclusions
FQKJXP	THE ORIGINAL NUMBER WAS GRINDED AND HAVE BEEN RESTORED READ AS C?72B5 (WHERE "?" IS THE NUMBER OR ALPHABET THAT CANNOT BE IDENTIFIED)
FQL298	The serial number was chemically processed and restored to read "C472B5".
FQL3CD	after use of our standard procedures for obliterated serial number restoration we found the following number (left to right): C472B5
FT9TAC	Serial number restoration revealed the number C472B5.
FWE74W	The metal plate was mechanically polished and chemically processed to restore the obliterated serial number. The serial number was successfully restored to read C472B5.
G2HGKP	Examination and processing of the Item 1 bar restored the original obliterated serial number, which was determined to be C472B5.
G44AMJ	The obliterated serial number on item A1-1 was restored and found to be C472B5.
G9UXRP	According to the results, the following conclusions: Alphanumeric sequence C472B5 was detected in the altered area of the identified metal piece 2017-0371 (received as Item 1) by the physical and chemical method.
GDVRY8	Item 1 - One piece of metal bar stock 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 was chemically processed and successfully restored to read: "C472B5".
GFHHZB	Using standard restoration techniques, the obliterated serial number on item 1 was restored to read: "C472B5".
GH8MWP	Electro-chemical method/etching is a process through which the obliterated numbers in metals can be restored with the assistance of acids and light electrical current. After application of the electro-acid etching process I determined the serial numbers of the Aluminium bar mentioned in 3.1.2 as C472B5 on the aluminium bar.
GHJJ3U	After application of the electro magnetic process I determined the serial number of the stainless steel bar stock as C472B5.
GJW7K9	The obliterated serial number of Item 1 was restored by means of mechanical polishing and chemical etching techniques and was found to be: C472B5.
GMEBBQ	The mechanism of the electro-chemical etching is a process through which the obliterated numbers in metal can be restored with the assistance of acids and light electrical current. After application of the electro-acid etching process I determined the serial number of the exhibit mentioned in 3.1.2.1 as C472B5.
GV8LKL	After application of the electromagnetic etching process, I determined the serial number, C472B5 on the piece of stainless steel bar stock.
H8KXJ2	Serial Number Restoration Analysis: Methodology- Chemical Reagent Etching/Microscopy/Physical Serial number restoration procedures revealed the serial number on Item 1, the bar stock, to be: C 4 7 2 B 5
HCTLW4	The serial number on Item QA01 was partially restored and reads C 4 7 2 ? 5 where the "?" is either an 8 or B.
HFHQUG	The obliterated serial number on the Item 1 piece of stainless steel was restored to read C472B5.
HG79KG	After treating the erased area I was able to read the original characters as C472B5.
HL6J2A	Submitted stainless steel bar - w/ obliterated #. Attempted recovery of suspected obliterated serial number. The recovered number was determined to be C472B5.

TABLE 2

WebCode	Conclusions
HLKW8Y	Forensic restoration techniques were applied to the machined area and a series of previously stamped characters was restored that read: C472B5.
HLZ7A8	Item 1 has been physically and chemically processed. It's serial number was fully restored to read "C472B5".
HNQA3E	Serial Number Restoration procedures were performed and it was determined that the obliterated serial number was C472B5.
HQWMVE	Item 001 (stainless steel bar stock) was examined and found to have an obliterated area. Standard restoration techniques revealed "C472B5".
HTHGM9	The Test No. 17-5250 (1) was physically and chemically processed. Its serial number was restored to read: C472B5.
J4HHNJ	The obliterated serial number on the stainless steel bar stock in Item 1 was completely restored and found to be C 4 7 2 B 5.
JBY6A9	Etching of the non-magnetic metal plate led to the revelation of the following digits and letters: C472B5.
JNLAFJ	[No Conclusions Reported.]
JNPMCT	The serial number on the aluminum plate (Exhibit 2) was mechanically and chemically treated and restored to read C472B5.
JTWGJ	I found filing marks on the metal plate Item 1. Upon electrochemical treatment on the filed surface, the number 'C472B5' was restored. Therefore, I am of the opinion that the obliterated serial number is C472B5.
JWYCPR	The serial number on the piece of metal (Exhibit 1) was mechanically and chemically treated and restored to read C472B5.
K3ZYUC	The piece of stainless steel bar stock sent to study presents six characters printed as follows: C472B5 by testing MagnaFlux.
K7G6T8	Serial number restoration revealed the number C472B5.
KAYADN	One (1) aluminum plate (2 3/8 length x 1" width) serial number defaced by circular abrasion. Marked "17-5250-Sample Pack: SNR1". Serial number restored using chemical etching process with the following results: "C472B5". FIU # scribed on evidence by examiner for identification purposes.
KC8EZK	The serial number on Item 1 was restored and read as C472B5.
KCL2ET	After application of the electro magnetic process, I determined the serial number of the steel bar as C472B5.
KKHR4A	An obliterated area was observed on Exhibit 1 (metal bar). Standard restoration techniques revealed the following characters: C472B5
KNEJQD	The metal piece received for restoration of serial numbers was revealed by the chemical revealing method (FRY's Reagent); the serial number revealed is C472B5.
KNG32U	The serial number on the submission 001-01 stainless steel barstock was fully restored to read: C 4 7 2 B 5
KQ4QBA	Examination and chemical processing of the obliterated serial number on item A was restored and determined to be "C472B5".
KUL2AY	Serial Number Restoration Analysis: Methodology- Chemical Reagent Etching/Microscopy/Physical Serial number restoration procedures revealed the serial number on Item 1A, the piece of metal bar stock to be: C 4 7 2 B 5



TABLE 2

WebCode	Conclusions
KW9UYM	Upon completion of polishing and chemical etching of the cut out portion of the stainless steel bar stock, Item 1, I determined that the serial number consists of the following six (6) alphanumeric characters, C472B5.
KZQV64	The Item 1 piece of bar stock was examined and found to exhibit an obliterated area on the center of the item. The obliterated area was polished + treated w/ a chemical etchant. This process revealed the following serial number: C472B5.
L4QBE4	Examination and chemical processing of Item 1 restored the original obliterated serial number which was determined to be "C472B5".
L7DYNH	The grinded surface on the stainless steel bar stock (Item 1) was electrochemically treated and a set of alphanumeric was restored and read as "C472B5".
LAGLP2	The serial number on the submitted piece of bar stock was chemically restored and was determined to be: C 4 7 2 B 5.
LCM7C2	Restoration procedures on Item 1 in exhibit SNR1 revealed the serial number to be: C 4 7 2 B 5
LF67U3	Acid etching chemicals were used to restore the obliterated serial number on item 1, the stainless steel bar stock. The serial number was restored and is C472B5.
LHQA3Z	Serial number restoration revealed the characters: C472B5
LHRWV8	Serial number restoration revealed the number C472B5.
LKDZ46	A non destructive restoration technique (Magnaflux) was utilised on the sample and the serial number was identified as C472B5.
LKWKDH	After application of the electro-magnetic etching process, I determined the serial number of the steel bar mentioned in 3.1 as C472B5.
LQLZ2P	Examination of Item 1 revealed the existence of traces of characters located on the center of one of the flat sides engraved and erased by mechanical means, the restored number is C472B5
LTWXGR	The serial number located on the stainless steel block, Item 1, was observed to have been completely obliterated. Restoration techniques were used to restore the obliterated serial number on this block to "C472B5". Digital images were captured.
LVV9B7	Mechanical and chemical processing was applied and the following characteristics were developed: C472B5
LWBRXP	The serial number on the metal plate (Exhibit 2) was mechanically and chemically treated and restored to read C472B5.
LWV9ED	Visual examination with mechanical and chemical processing of the stainless steel bar stock (Item 1) revealed the obliterated serial number to read: C 4 7 2 B 5.
LXHYCB	The characters were removed approximately 0.2-0.3 mm thickness. The removed serial number was resulted by the examination: C472B5.
M6KGD9	Serial number restoration techniques were applied to the submitted portion of metal (Item 1). The serial number was determined to be C472B5.
M6W6N9	A PIECE OF STAINLESS STEEL BAR STOCK WITH AN OBLITERATED SERIAL NUMBER WAS RECEIVED AND WAS MARKED Q1. THE SERIAL NUMBER WAS RESTORED AND WAS DETERMINED TO BE C472B5.
MB848E	Using magnetic particle inspection, the obliterated serial number on Item 1 was determined to be C472B5.
MH4786	Examination of the barstock in Item #1 revealed an obliterated area. Standard restoration techniques revealed the following characters "C472?5". Where the question mark could be either a "B" or "8".

TABLE 2

WebCode	Conclusions
MKPW9A	The obliterated surface on the steel bar stock (Item 1) was sanded and chemically processed. All characters could have been seen almost in same time during the examination.
MQG22D	To piece of steel with suspected obliterated serial number, it's restored serial number C472B5, wich is according to the attached reference material.
MVR7Y8	Magnetic Particle Inspection processing restored the Exhibit 1 obliterated markings to read "C472B5".
MYRCHJ	The obliterated serial number was restored and concluded to most likely be C472B5.
N2DJG7	Results/Opinions and Interpretations: The Item 1 stainless steel bar was physically and chemically processed in an attempt to restore the obliterated serial number. The result is that the serial number was restored to read "C472B5". The restored serial number was not searched in any database.
N2VJAB	Item #1 serial number, C472B5, fully restored using the Magnaflux process.
N8HGQB	The enhanced serial number on item 1 is C472B5.
NANUJ7	Serial number restoration was performed on the Item 1 bar stock. The restored serial number was C472B5.
NHKLUK	The obliterated serial number was restored to read C472B5.
NL26XN	The obliterated area was polished and Magnaflux® was used to fully restore the six character serial number. The serial number was determined to be C 4 7 2 B 5.
NNTXWD	The serial number on Item 1 was restored to read: C472B5. Item 1A was used for reference purposes only.
NY9PKM	The serial number on the piece of metal (Exhibit 01) was mechanically and chemically treated and restored to read C472B5.
P2UUTK	The six character obliterated serial number present on Item #1 (non-magnetic metal bar stock) was partially restored to read C 4 7 2 * 5. The asterisk represents a "3" or "8".
P4FMLE	After application of the electromagnetic etching process, I determined the serial number on the piece of aluminium bar stock labeled as "Aluminum Standard" as C472B5.
PEJTKM	The serial number area was mechanically polished and chemically processed to restore the obliterated serial number. The serial number was successfully restored to read C472B5.
PELLFA	Using standard laboratory techniques, the serial number on Item 1 was magnetically restored to read "C472B5".
PFVTGG	The serial number on the steel plate has been deliberately obliterated by a milling process. Our attempt to reveal this number by an etching method revealed the following number : C472B5.
PHGJHL	After application of the electro magnetic process, I determined the serial number C472B5 on the suspected obliterated area of the stainless steel bar stock.
PJU4E3	Standard serial number restoration techniques revealed the following characters "C47285".
PP38MP	The serial number of the metal bar was restored to read: C 4 7 2 B 5
PPDA83	Standard chemical restoration techniques were applied to Item 1 with the following characters being restored: "C472B5".
PTVEXK	RESULTS OF RESTORATION: 1- A chemical etching process was performed to restore the obliterated serial number utilizing the following chemicals, in order of application: Nitric Acid, Davis Solution, Turner Solution, and Fry's Reagent. 2-The restored serial number is C472B5

TABLE 2

WebCode	Conclusions
PURUAH	The experiment was for the restoration of obliterated or altered serial number procedure and applies to any metallic evidence.
PV3YJZ	The stainless steel bar stock was physically and chemically processed. Its serial number was restored to read: C472B5.
PZFG6M	After conducting a serial number restoration process using Electro Magnetic Process, I determined the serial number of the stainless steel bar stock as C472B5.
Q3DH3Z	Item 1 was examined and found to exhibit an area of obliteration. Polishing and chemical etching of the obliterated area revealed the following serial number: C472B5.
Q3X7PC	The item 1 (LIMS #1-1-1) bar stock with suspected obliterated serial number was examined and processed using standard serial number chemical restoration techniques. The serial number was restored to read - C472B5.
Q6KXQG	The (Green Mamba) diluted Sulphuric Acid (H2SO4) its a very usefull acid that is used in the mechanism of electro chemical etching where by the obliterated serial number in a metal can be restored with the assistant or catalyst & light electrical current. Same method was applied in the piece of stainless steel bar stock & succesfully recovered as C472B5.
QBC8W9	The alphanumeric sequence restored in the evidence identified as E1-17-0369 is C472B5
QC6NJ4	1. Item 1 is a stainless steel bar stock with suspected obliterated serial number. 2. Mechanical processing of Item 1 revealed that the original serial number is "C 4 7 2 B 5."
QD24VZ	The area of obliteration was mechanically polished and chemically etched fully restoring the serial number to: C 4 7 2 B 5.
QEDYF8	Using standard laboratory techniques, the obliterated serial number on Item 1 was restored to read "0 4 7 2 8 5".
QF4EFG	The serial number of the piece of stainless steel bar stock, described in item #1, was restored and correspond to: C472B5.
QF6WPY	Examination and processing of Item 1 restored the original obliterated serial number which was determined to be "C472B5".
QHTKZE	On analysis, I found there was filling mark on the surface of the steel bar. On electrochemical treatment on the filled surface region, I found number "C472B5" emerged on the filled surface. Hence, I am of the opinion that the number of the steel bar was tempered and the original number was "C472B5".
QJ67WU	Sample 17-5250 (SNR1) was a piece of stainless steel submitted for examination. The area at which the number marked on the exhibit had been obliterated by milling. The area was treated using chemical restoration techniques and the number "C472B5" was restored. This number was observed and confirmed by [Name].
QMATD6	The serial number of Item 1 was mechanically and chemically processed and restored to read "C472B5". This conclusion was verified by Firearms Examiner [name].
QRKWEF	After application of the electro-acid etching process, I determined the serial number of the exhibit mentioned in 3.1.1 as C472B5.
QVGH6H	A piece of stainless steel bar stock with suspected obliterated serial number was received by me. I conducted serial number restoration process using Electro Magnetic process and determined the serial number of a piece of stainless steel bar stock as C472B5.
QVYMMG	The obliterated serial number on the bar stock (Item 1)was mechanically and chemically processed and restored to read C472B5.
QVYQUD	[No Conclusions Reported].

TABLE 2

WebCode	Conclusions
R4TYCH	Using standard laboratory techniques, the obliterated serial number on Item 001-01 was restored to read "C472B5". No examination performed on the Item 001-02 aluminum standard.
RAFYG3	One (1) block of silver non ferrous metal measuring approximately 2 3/4" x 1" x 1/4" displaying a 1" x 1" area milled away. Serial number C472B5 recovered with chemical etching. Item marked 17-5250 for identification.
RCKGP7	Using chemical etching techniques, the serial number was restored to read C472B5. The aluminum standard was not further examined.
RGX8ZR	Serial Number Restoration Analysis: Methodology- Chemical Reagent Etching/Microscopy/Physical Serial number restoration procedures revealed the serial number on Item 1, the bar stock, to be: C 4 7 2 B 5
RHAY3G	The following serial number: C472B5 was recovered and read out as the result of examination of the item designated as Item 1. Decoded alphanumeric characters were compared with the characters located on sample designated as standard. The standard sample was made of aluminum, whereas Item 1 was paramagnetic.
RPM6GZ	Examination and magnetic processing restored the obliterated serial number, which was determined to be "C472B5".
RRCC2W	Stainless steel bar stock (1) was physically and chemically processed. Its serial number was restored to read: C472B5
RXMFXQ	A series of previously stamped characters were restored which read: C472B5. The size and font were similar to those used in the aluminium bar stock labelled "standard"
T49TE6	Using Standard laboratory restoration techniques, the serial number on Item 1 was restored to read C 4 7 2 B 5.
T9XEYC	After application of the electro magnetic process, I determined the serial number of the piece of aluminum bar as C472B5.
TL7TM4	The obliterated serial number of the stainless steel bar stock (Item 1) was chemically restored and determined to be C472B5.
TLHU3B	One (1) aluminium bar stock not marked by me. One (1) stainless steel bar stock marked by me 61825/17 1. Intention and scope of forensic investigation: Techniques associated with the recovery and restoration processes of obliterated alpha-numeric figures on metals. After application of the electro magnetic process, I determined the serial number on the stainless steel bar stock is C472B5.
TNQ3BV	Examinations showed the serial number of Item 1 to be obliterated. The serial number was restored using magnetic particle restoration techniques and was determined to be: C472B5.
TREAZY	Standard laboratory procedures for restoring serial numbers stamped in metal have been employed on the surface of the submitted bar stock. The serial number was determined to be "C472B5"
TW8DT3	Serial number restoration techniques were applied to the submitted aluminum bar stock (Item 1). The serial number was determined to be C472B5.
U3Q4NW	Ex. 1, Agency #1, one stainless steel bar block with an obliterated serial number. The serial number on Exhibit 1 was chemically restored to be C472B5.
U6FA9U	Item 1 is a piece of stainless steel bar stock with suspected obliterated serial number. Using standard serial number restoration techniques the serial number of Item 1 was restored to read C472B5.

TABLE 2

WebCode	Conclusions
UE3D8F	The surface of the examination object have been examined by the equipment CRIME-Lite M2 with the ultra violet rays 396-425nm, using filter GG455-AG. At the second stage it has been examined with the VSC 6000/HS ultra violet rays 365nm. The surface has been polished by emery cloth and cleaned by metal surfacing solution (N RAG 5003 SIRCHE). The surface has been treated by RESTOR-A-GEL STEEL(RAG-1001 SIRCHE) three times and as aresult the serial number has been restored on the bar stock.The numbers are the following:C472B5.
UGMFYL	Examination of the submitted piece of bar stock revealed the applied serial number to have been obliterated. Physical processing of the piece of bar stock restored the obliterated, original serial number to read "C472B5".
UJZPCT	Item # 1, obliterated serial number in stainless steel bar stock, was chemically restored to read C472B5.
UK6LA3	Once performed the test corresponding to Serial Revealed, in sample identified as Test No. 17-5250 Item 1, it was identified the serial number C472B5.
UMVTUY	THE STAINLESS STEEL BAR STOCK (ITEM 1) WAS MARKED Q1, [Initials], U3768E TO THE LEFT OF THE SUSPECTED OBLITERATED SERIAL NUMBER AREA. THE AREA WITH THE SUSPECTED OBLITERATED SERIAL NUMBER WAS POLISHED WITH A DREMEL TOOL, AND THEN THE CHEMICAL ETCHING SOLUTIONS WERE APPLIED. THE OBLITERATED SERIAL NUMBER WAS RESTORED TO READ AS FOLLOWS: C472B5.
UR72ZA	After the application of the electro magnetic etching process I determined the serial number of the steel plate as C472B5.
URMXN4	A serial number restoration was attempted on Exhibit 1. The characters were observed as C 4 7 2 ? 5. The fifth character could be either an "8" or a "B".
UUV6TG	3. On 2017-02-14 during the performance of my official duties I received a sealed evidence bag with number PA5001609773 from Case Administration of the Ballistics Section, containing the following Item 1. 3.1 One (1) sealed envelope, marked "2017 CTS Forensic Testing Program Test No. 17-5250: Serial Number Restoration Sample Pack: SNR1", containing the following exhibits: 3.1.1 One (1) piece of stainless steel bar stock marked "Item 1 Test No 17-5250". 3.1.2 One (1) piece of aluminium bar stock marked "aluminium standard".
UVQJNM	Examination of the submitted Stainless Steel plate revealed the serial number to be obliterated. Magnetic and physical processing revealed the original serial number to read C472B5.
UZY6AY	1. The obliterated area on Exhibit 1 (metal block) was visually examined and processed using magnetic particle reagent. The characters were restored to read: C 4 7 2 B 5.
V3HKWC	The mechanism of electro-chemical etching is a process through which the obliterated numbers in metals can be restored with the assistance of acids and light electrical current. After application of the electro-acid etching process I determined the serial number of the exhibit mentioned in 3.1.2.1 as C472B5.
V9QRV3	In the metal part received for analysis the following digits were restoted: C472B5.
VGMMW8	After application of the electromagnetic process, I determined the serial number of the steel barplate as C472B5.
VLEQPC	After application of the electro-acid etching process, I determined the serial number of the exhibit (Item 1) marked by me 92084/17 A1 as C472B5.
VR2UGE	The serial number on the piece of metal (Exhibit 1) was mechanically and chemically treated and restored to read C472B5.
VUMM63	Chemical treatment was successful in chemically restoring a serial number on the bar. The serial number on the bar was restored to read C 4 7 2 B 5.

TABLE 2

WebCode	Conclusions
VUQ22C	Serial number was recovered by chemical etching method.
VUUNG4	The serial number on item #1 was restored to read C472B5
VZFPD9	3. On 2017-02-08 during the performance of my official duties I received a sealed evidence bag with number PA5001609778 from Case Administration of the Ballistics Section, containing the following exhibits: 3.1 One (1) stainless steel bar with serial number removed marked by me "61866/17 A". 3.2 One (1) aluminium bar stamped with alpha-numeric characters not marked by me. 4. The intention and scope of this forensic examination comprise of the following: 4.1 Techniques associated with the recovering and restoration processes of obliterated alpha-numeric figures on metals. 5. After application of the electro-magnetic process, I determined the serial number on the stainless steel bar as C472B5.
W3JKT6	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, C472B5.
W64KWR	Items of Evidence/Items Examined: CTS 17-5250 PI 17-5250 Line 1. Item 1: One stainless steel bar stock with suspected obliterated serial number. Results: The restored serial number was found to be "C472B5". Verified by/Date: [Name] on 03/07/17. Evidence disposition: [State] Crime Lab Unit. This report contains the conclusions, opinions, and/or interpretations of the examiner(s) named within this report.
W8UNPY	Magnetic and chemical processing of Exhibit 1 restored an obliterated marking that was concluded to be "C472B5".
WK2W8G	The following characters were recovered on item 1: C 4 7 2 B 5
WKLDMJ	Examination of the submitted piece of bar stock steel revealed the applied serial number to have been obliterated. Physical processing of the piece of bar stock steel restored the obliterated, original serial number to read "C472B5".
WL92WY	THE SURFACE OF ITEM 1, A SECTION OF STAINLESS STEEL BARSTOCK WAS POLISHED TO PREPARE IT FOR THE CHEMICAL ETCHING PROCESS. THE NUMBER WAS RESTORED BY THE CHEMICAL ETCHING PROCESS TO READ "C472B5"
WM6G7B	The piece of stainless steel bar was altered. After the restoration process, the secuencia C472B5 was obtained.
WMJ3HX	THE SURFACE OF Q1 (ITEM 1) STAINLESS STEEL BAR STOCK WAS POLISHED TO PREPARE IT FOR THE APPLICATION OF CHEMICAL ETCHING SOLUTIONS. THE NUMBER RESTORED BY THE RESTORATION PROCESS READS: C472B5
WYZG7T	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 chemical reagents. As a result of these actions, the following characters were recovered: C 4 7 2 B 5
WZ9XWC	Using standard laboratory restoration techniques, it was determined that the obliterated serial number on Exhibit 001-01 was restored to read "C472B5". No examinations were performed on Exhibit 001-02, aluminum standard.

TABLE 2

WebCode	Conclusions
X3GAED	3. On 2017-02-09 during the performance of my official duties I received a sealed evidence bag with number PA5001609775 from Case Administration of the Ballistics Section containing the following exhibit: 3.1 One (1) piece of stainless steel bar stock with suspected obliterated serial number marked by me "61798/17". 4. The intention and scope of this forensic examination comprise of the following: 4.1 Techniques associated with the recovering and restoration processes of obliterated alpha-numeric figures on metals. 5. After application of the electro-magnetic process, I determined the alpha numeric figures on the stainless steel bar mentioned in paragraph 3.1 as C472B5. 6. The conclusions arrived at were based on facts, established by means of an examination and process which require a knowledge and skill in Forensic Ballistics.
XB8VHQ	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 C472B5.
XDDF7Q	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 C472B5.
XFZVX8	After application of the electro-acid etching process, I determined the serial number of the stainless steel bar mentioned in 3.1 as C472B5.
XGVFMR	The stainless steel bar was physically/ chemically processed. Its serial number was restored to read : C472B5.
XJ2ZDD	3. On 2017-02-21 during the performance of my official duties I received a sealed evidence bag with number PA5001609771 from Case Administration of the Ballistics Section, containing the following: 3.1 One (1) stainless steel flat bar with an obliterated number marked by me "61657/17 A". 3.2 One (1) reference aluminium bar (not marked by me). 4. The intention and scope of this forensic examination comprise the following: 4.1 Techniques associated with the recovering and restoration processes of obliterated alpha-numeric figures on metals. 5. After application of the electro-magnetic process, I determined the number of the exhibit mentioned in paragraph 3.1 as C472B5.
XJNK67	This area was cleaned, polished and chemically processed in a attempt to restore the obliterated serial number. The serial number C472B5 was successfully restored.
XLB2HK	Chemical examination of the milled surface showed that the characters C472B5 had originally been stamped into the surface of item 1.
XM8GUG	Mechanical and Chemical processing of the submitted stainless steel bar stock revealed that the original serial number is C472B5
XNTAJ6	The obliterated serial number, located on the front center of the blank, was processed and restored to read "C472B5."
XRE69J	The serial number was restored to read "C472B5".
XX23QE	After application of the Electro-Acid Etching and Electro-Magnetic processes, I determined the serial number of the stainless steel bar stock as C472B5.
XXLH4V	In the area of the determined material removal of the stainless steel bar, the following characters could be made visible again: C472B5.
Y4NZ6U	The serial number on item 1 was restored to C472B5.
YDB2GW	Visual examination of this item revealed the presence of polish marks on one side of the stainless steel bar stock. This area was etched with acid solutions and the following was restored: C 4 7 2 B 5
YGBAPD	The obliteration on the Item 1 block of metal appears to have been accomplished using an end mill tool. No hidden serial numbers were observed on the block. The obliterated area was cleaned, polished, and etched with chemical reagents. A serial number of C472B5 was restored.

TABLE 2

WebCode	Conclusions
YJHRNA	One (1) piece of stainless steel bar stock (approx 2 3/4" x 1") submitted with a suspected obliterated serial number. Approximately 1" x1" area of surface was removed by grinding. Serial number "C472B5" restored using magnetic particle inspection process. Bar stock was scribed with "17-5250" for identification purposes by examiner.
YPMH39	Examination of the surface of the stainless steel bar revealed evidence of an obliterated serial number. The surface was treated and the following original serial number was restored: C 4 7 2 B 5.
YREC76	After application of the electro magnetic process, I determined the serial number of the stainless steel bar as C472B5.
YVCXT2	The serial number of the piece metal identified item 1 is C472B5.
YW22L9	The serial number of the piece of stainless steel bar stock was restored and corresponds to: C472B5.
YWHFRW	After performing the serial number restoration test over the provided stainless steel bar the following serial number was recovered: C472B5.
YZA6KQ	Examination and restoration of the obliterated area on Item 1 (a piece of stainless steel) revealed the following characters: "C472B5".
Z4GFQP	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, the serial number was successfully restored to read "C 4 7 2 B 5".
Z4KZFD	The obliterated serial number was chemically restored and reads: C472B5.
Z7A4CQ	The Exhibit's surface was lightly polished, using grinding paper 120 and 600. The polished surface was then treated with Fry's reagent. The results were successfully photographed.
ZXUC28	The mechanism of Electro-Chemical Etching is a process through which the obliterated numbers in metals can be restored with the assistance of acids and light electrical current. After application of the electro-acid etching process I determined the serial number C472B5 on the piece of stainless steel bar stock.



# Sample Preparation

(listed in order of use)

TABLE 3

WebCode	Method	Tool Used	Grit Size
26WUXY	Polishing	Microfinishing Film	15 micron
	Polishing	Freedom Rotary Tool	
2BGRQT	Polishing	Rotary Tool	
2EFJ84	Dremel polishing	Dremel	
2GLVCK	Polishing	Sand paper	800
2JBZ9X	Visual		
	Sanding	Sand paper	400
	Sanding	Sand paper	320
	Sanding	Sand paper	400
	Sanding	Sand paper	600
	Sanding	Sand paper	1500
2JDPBA	Polishing	Dremel	
2PGVQD	Sanding	Sand paper	
2R4JZR	Visual	Stereoscope	
	Sanding	Sand paper	240
	Polishing	Steel wool	320
2WENY8	Polishing	Hand held grinder	
36AMAT	Polishing	Steel wool	
3A4KXJ	Polishing	Emery paper	
3CPQVL	Polishing	Dremel	
3EVXCT	Polishing	Dremel	FINE
3HV7JN	Polishing		
3TRCCM	Cleaning	Acetone	
	Polishing	Steel wool	
3UNTMX	Polishing	Dremel	
3Y2DV6	Visual	magnifyer	
	Sanding	Sand paper	220 and 1000

TABLE 3

WebCode	Method	Tool Used	Grit Size
42NHUU	None		
49JH9M	N/A -> none of these were used to prepare the sample prior to recovery		
4M4R6Z	None		
4NJ39Y	Visual Polishing		> 400 grit
4UHZ72	Visual Cleaning Sanding	Microscope Acetone Sand paper	100
4WAMCC	Sanding	Sand paper	120
62W4TU	Sanding	Sand paper	220
62ZGN4	Visual inspection Polishing	Stereoscope Dremel tool	
64RBNT	Visual Polishing Polishing	Stereoscope Dremel Steel wool	Extra fine
6DR98M	Polishing	Dremel	
6E36FX	Polishing and miproacies	Dremel	1200
6GTAA6	Visual	Photography	
6JE32Y	Polishing	Magnetic York	
6MKGRD	Cleaning Visual Visual	Prepsol Reprosil Positest	M1V1 - clean/prep surface M2V1 - Cast surface M7V1 - Positest material
6NDAR3	Visual Visual Sanding Cleaning	Camera Nikon D100 Stereoscope Sand paper Acetone	fine
6RTW3M	Visual Polishing	Stereoscope Dremel	
6XXMHL	Visual		
74GDGL	Polishing	Dremel	

TABLE 3

WebCode	Method	Tool Used	Grit Size
79FHJ7	Visual	Stereoscope	
	Sanding	Dremel	120 + 300 grit
	Sanding/Polishing	hand sanding	400 + 600 grit
7B2B8U	Sanding	Sand paper	360
7CANPW	Sanding	Sand paper	fine
	Cleaning	Acetone	
7GCAUL	None		
7KQY6H	Sanding	Sand paper	220
7LGDFD	Polishing	Dremel	
7PGC4K	Visual	Stereoscope	
7QVVQ4	Visual	Stereoscope	
8ALMAZ	Polished	Dremel	
8BVJQX	None		
8CAWLM	Polish/sand	Dremel Tool	fine
8CDFAP	Polishing	Dremel	
	Polishing	Sand paper	400
8MTDAM	Polishing	Rotary Tool	2S FN
8PYXXM	Polishing	Dremel	
8QBGZ6	3.1 Sanding/polishing untill glossy finish obtained using rotary tool	Sanding paper	fine (600)
	3.2 De grease/ fat removed	alcohol swap	methanol
9G2M3H	Polishing	Dremel	
9L9ZYV	Visual		
9NHYPK	Cleaning	soft cloth	
9PEGHK	Polishing	Dremel	
9V37W3	Sanding	Dremel	P600
9X3EXR	Polishing	Sand paper	600
9X7RU2	Polishing	Dremel	
9YYRLK	Sanding	Sand paper	320

TABLE 3

WebCode	Method	Tool Used	Grit Size
9ZAP2M	Visual	Stereoscope	
A2Q2JR	Visual		
	Visual	Stereoscope	Microscopically viewed using stereoscope and photographed
	Polishing	Rotary Tool	Polished to smooth out obliterated area
A7JZXN	Polishing	Dremel	
A8U687	Polishing	Dremel	
A92KFW	None		
AACBHL	Visual	Microscope	
	Polishing	Dremel	
ABMBG2	Cleaning the surface with acetone	coten wool	
	Polishing tool to smooth surface- Dremmeltool		
ACHW7L	Visual		
	Cleaning		
	Polishing	Rotary Tool	
ADX7AK	Visual	Stereoscope	
	Polishing	Rotary Tool	
AE6BY3	Sanding		
	Polishing		
AFKUJZ	Sanding	Sand paper	80
	Sanding	Sand paper	150
	Sanding	Sand paper	400
	Polishing	Steel wool	
AFMDUH	None		
AGDTTR	None		
AGF7PZ	Polish	Dremel	#240 grit
AJ7D8C	Grinding	Dremel	Fine grinding wheel to remove toolmarks
	Sanding	Emery paper	320
	Polishing	Buffing wheel	

TABLE 3

WebCode	Method	Tool Used	Grit Size
AQH NZ4	Visual Exam	Stereo microscope	
AUX9WQ	Visual	Stereoscope	
	Polishing	Dremel	red (fine) "Cratex"
B3DY9B	Visual	Stereoscope	
	Cleaning	Acetone	
	None	Forensic Sil Cast	
	Polishing	Sand paper	600
	Polishing	Sand paper	1200
B47VJ	None		
B79ZYQ	Polishing	Dremel	
BA7LQU	Sanding	Dremel	150 Grit
	Sanding	Sand paper	1500 Grit
	Polishing	Dremel	
	Visual	Magnifying Glass	
BCFJ9H	Visual		
BE2BAL	Polishing	Dremel	
	Sanding	Sand paper	
BJYMFK	none- surface was already smooth		
BMY3K2	Sanding	Dremmel	600
	Polishing	Syringe and polishing cloth	32 mm diameter
BQY8HF	Polishing	Dremel	cratex ruber
BUME7J	Polishing	Dremel	
BZKFUP	Sanding	Sand paper	
	Polishing	Dremel	
BZNTPY	Polishing	Sand paper	100, 300, 1000
	None		
C3QZHQ	None		
C9XJQG	Sanding	Dremel	#500 Medium Soft
CA9JRG	Polishing	Dremel	

TABLE 3

WebCode	Method	Tool Used	Grit Size
CCV82W	Sanding White contrast paint Magnetic fluid ink	Dremel Spray can Pipette	
CJQA2M	The stainless steel bar sample was sanded down to remove any gross scratches caused by the obliterating process then polished to a mirror-like finish.	Rotary Tool model CRT 40	60 then 100 then 600
CKUMWV	Visual Polishing Cleaning	Stereoscope Sand paper water + lubricant	P 400
CMWL73	Sanding	Sand paper	
CQELM4	Visual		
CTD9RR	Polishing	Dremel	#74 Brownell
CUER7G	Polishing	Dremel	
CZ4AKR	Visual Sanding Polishing	Stereoscope Sand paper Dremel	220
D97ZCT	Sanding	Sand paper	400, 220 and 80
DAL9QN	Polishing with Dremel Wheel	Dremel	
DEFAR3	Visual	Stereoscope	
DFQAPW	Sanding	Sand paper	120,180,360
DG23GP	Cleaning	Acetone	
DJ8N7B	Polish + level surface	Dremel Tool	
DK6XZT	Polishing	Sand paper	100 /220
DVJTFR	Sanding	Dremel	80
DWGAHG	None		
E6Q2KK	None		
EB8N6N	Dremel - cleanup the surface Visual inspection	Dremel Flashlights, optivosor and magnifying glass	

TABLE 3

WebCode	Method	Tool Used	Grit Size
EBH97D	Polishing	Dremel	
EFAFNM	Visual		
	Polishing	Sand paper	400
EKZPWY	Visual	Magnifying Lamp	
	Sanding	Sand paper	400
	Grinding	Dremel	200
EX6WMP	Visual	Microscope	
F8B8HL	Visual	Microscope	
	Polishing	Rotary Tool	Polishing wheel
FBU8VG	Visual	Magnification	
FDZNB	Sanding	Emery paper	Coarse
FF2X28	Sanding	Steel wool	fine
FHTRZX	Polishing	Dremel	
FK24JK	Sanding	Sand paper	150 Grit
	Sanding	Sand paper	220 Grit
FNJ42K	N/A		
FQKJXP	Cleaning	Acetone	
FQL298	Polishing	Dremel	
FQL3CD	None		
FT9TAC	Visual	Microscope	
FWE74W	Polish	Dremel	Cratex fine & extra fine
G2HGKP	None		
G44AMJ	Grinding	Dremel	
	Polishing	Dremel	
G9UXRP	Sanding	Sand paper	220
	Polishing	Sand paper	1000
GDVRY8	Polishing	Steel wool	
	Polishing	Dremel	
GFHHZB	Polishing	Dremel	

TABLE 3

WebCode	Method	Tool Used	Grit Size
GH8MWP	Polish the area to be etched with sand paper  Do not remove more of metal  Clean area and remove all the chemicals with acetone or ethanol	Jeweller's drill, PM1	120 and 32 diameter
GHJJ3U	Sanding the steel bar with a sand paper  Attach steel bar to the Gammatec  Apply magnet ink	Foredom Gammatec	Coarse
GJW7K9	Polishing	Dremel	3M wheel-Scotch Brite-Finishing
GMEBBQ	Polishing the area to the mirror shine and smooth	Jewellery drill Pm 1	120 CRT, 32min
GV8LKL			
H8KXJ2	Sanding	Dremel	220
HCTLW4	Polishing Polishing	Emery paper Dremel	
HFHQUG	Visual inspection Polishing	Stereomicroscope Dremel	
HG79KG	Polishing	Emery paper	240 / 400 / 600
HL6J2A	Dremel Polish Emory Paper Polish	Dremel Tool A/O Res Cloth T2	#44
HLKW8Y	Polishing	Emery paper	1200
HLZ7A8	Sanding	Sand paper	Medium grade
HNQA3E	Sanding	Sand paper	P600; 1200
HQWMVE	None		
HTHGM9	Sanding	Sand paper	coarse
J4HHNJ	None		
JBY6A9	Sanding	Sand paper	
JNLAFJ	None		
JNPMCT	Polishing	Dremel	



TABLE 3

WebCode	Method	Tool Used	Grit Size
JTWDGJ	Cleaning	Acetone	
JWYCPR	Polishing	Dremel	
K3ZYUC	Visual Polishing	Sand paper	
K7G6T8	Visual Cleaning	Acetone	
KAYADN	Polishing		
KC8EZK	None		
KCL2ET	Sanding the steel bar with sand paper and foredom motor sandbar  Put the steel bar on the Gammatec machine and apply black magnetic particle on the steel bar to see the number	Foredom motor sander  Gammatec magnetic machine	Coarse and fine
KKHR4A	Polishing	Dremel	
KNEJQD	Polishing	Polisher	
KNG32U	Sanding	Sand paper	400
KQ4QBA	Sanding Polishing Polishing	Dremel Sand paper powder	120 grit sanding band 600 mesh aluminum oxide paper microgrit polish
KUL2AY	Grinding Sanding	Dremel Sand paper	220
KW9UYM	Visual examination for character remnants Sanding and polishing Cleaning	Stereomicroscope Sandpaper Delicate task Wipers & Acetone	P320, P400
KZQV64	Polish	Dremel	
L4QBE4	Sanding	hand	400 Grit
L7DYNH	Cleaning	Acetone	
LAGLP2	Polishing	Dremel	

TABLE 3

WebCode	Method	Tool Used	Grit Size
LCM7C2	Visual	Dremel	
LF67U3	Sanding	Sand paper	240 grit
LHQA3Z	Polishing	Dremel	
LHRWV8	Sanding	Dremel	1/2"sanding discs
LKDZ46	Visual	Microscope	
LKWKDH	Polishing	Sander	
LQLZ2P	None	Not Applied	Not Applied
LTWXGR	Visual Examination	Microscope	Low magnification
	Polishing	Dremel	Fine cratex wheel
LVV9B7	Polishing	Dremel	
LWBRXP	Polishing	Dremel	
LWV9ED	Visual		
	Sanding	Block	200/400 w/ oil
	Polishing	Block	600 w/ oil
	Visual		
LXHYCB	The surface was cleaned	Acetone	
M6KGD9	Polishing	Dremel	
M6W6N9	Grinding	Dremel	
MB848E	Polishing	Dremel type	fine
MH4786	Polishing	Dremel	
MKPW9A	Sanding	Sand paper	P400
MQG22D	Sanding	Sand paper	600
MVR7Y8	Visual	Stereoscope	none applied
MYRCHJ	Sanding	Dremel	120
	Sanding	Sand paper	220
	Sanding	Sand paper	1500
	Polishing	Dremel	
N2DJG7	Sanding	Sand paper	150
N2VJAB	Wipe down with cloth		

TABLE 3

WebCode	Method	Tool Used	Grit Size
N8HGQB	Visual	Stereoscope	
NANUJ7	Visual	eye, microscope	
	Polishing	Dremel	blue wheel
NHKLUK	Sanding	Sand paper	150
NL26XN	Polishing	Dremel w/ cratex polishing point	
NNTXWD	Polishing	Dremel	
NY9PKM	Polishing	Dremel	
	Cleaning	water	
P2UUTK	Grinding	Dremel	Fine grinding wheel
	Polishing	Sand paper	300 grit
P4FMLE	Exhibit was polished	Sander	
	White contrast paint applied	White spray paint	
	Exhibit magnetised	Magnetic yoke	
	Black magnetic spray solution applied	Black ink spray	
PEJTKM	Visual	flashlight	
	Polishing	Dremel tool	
PELLFA	None		
PFVTGG	Visual	Stereoscope	
	Sanding	Rotary Tool	240
PHGJHL	No sanding and no polishing		
PJU4E3	Visual	Stereoscope	
	Polishing	Dremel	
PP38MP	Polishing	Dremel	
PPDA83	Visual	Eyes	
	Visual	Stereoscope	

TABLE 3

WebCode	Method	Tool Used	Grit Size
PTVEXK	Visual	Eyes	
	Visual	Stereoscope	
	Cleaning	Acetone	
	Sanding	Sand paper	500
	Cleaning	Acetone	
	Sanding	Sand paper	1000
	Cleaning	Acetone	
PURUAH	Sanding	Dremel Tool, Transformer, electrodes, Fry's Reagent, Green mamba (solution), cotton swab	
		The aluminum metal (Item 1) marked 91982/17 A was polished with sand paper (type disc material) to remove chips from the metal surface (mirror-like shine)	
PV3YJZ	Sanding	Sand paper	Medium
PZFG6M	Sanding	Dremmel Tool	Coarse paper (120 grit 32 mm)
	Polishing	Dremmel Tool	fine paper (32 mm)
	Visual	Magnifying Lamp	
	Magnetising	Gammatech (Magnetic Machine)	
Q3DH3Z	Polishing	Dremel	
Q3X7PC	Polishing	Dremel	
Q6KXQG	Polish the area suspected obliterated serial number to a mirror shine & smooth	PM1 Jewellers Drill	1200 grit (32mm)
QBC8W9	Sanding	Sand paper	220 / 1000
QC6NJ4	Visual		
QD24VZ	Polishing	Dremel	
QEDYF8	Sanding	Sand paper	400
QF4EFG	Visual	Stereoscope	
	Sanding	Sand paper	220
	Cleaning	Emery paper	
QF6WPY	Polishing	Dremel	

TABLE 3

WebCode	Method	Tool Used	Grit Size
QHTKZE	Item C004: Examination and restoration of erased identification markings.		
QJ67WU	Visual		
	Grinding	No. 1 file	
	Sanding		600
	Sanding		1200
QMATD6	Polishing	Dremel	
QRKWEF	Sanding	The Dremel tool	600 grit
	Cleaning the area	paper towel dipped in acetone	
QVGH6H	Sanding	Dremmel Tool (foredom machine)	Coarse paper 120 grit 32 mm diameter
	Polishing	Dremmel Tool (foredom machine)	fine paper 600 grit 32 mm diameter
	Magnetising	electro magnetic machine (gammatec)	
	Visual	Magnifying Lamp	
QVYMMG	Polishing	Rotary Tool	polishing wheel
QVYQUD	Polishing		
R4TYCH	Visual	Stereoscope	
RAFYG3	Polished	Rotary Tool	
RCKGP7	Visual	Stereoscope	
	Polishing	Dremel	120 grit
	Polishing	Dremel	steel wool disc
RGX8ZR	Visual		
	Sanding	Dremel	180
RHAY3G	Visual	Microscope	
RPM6GZ	None		
RRCC2W	Sanding	Sand paper	Medium
RXMXQ	Sanding	Emery paper	800
T49TE6	None		

TABLE 3

WebCode	Method	Tool Used	Grit Size
T9XEYC	Exhibit was polished	Sander	
	Contrast paint applied	white spray paint	
	Exhibit magnetised	Yoke	
	Ionised particle applied	black spray paint	
TL7TM4	Visual	Stereoscope	
	Polishing	Rotary Tool	
TLHU3B	Polished with clean paper	by hand	
TNQ3BV	None		
TREAZY	Visual	Stereoscope	
	Polishing	Dremel	
TW8DT3	Visual	Stereoscope	
	Polishing	Dremel	
U3Q4NW	Sanding	Dremel	coarse
	Polishing	Dremel	fine
U6FA9U	Polishing	Rotary Tool	
UE3D8F	Visual		
UGMFYL	Polishing	grinding wheel	
UJZPCT	Visual		
	Polishing	Dremel	
UK6LA3	Polishing	Sand paper	The grit size used was 220 and 500
UMVTUY	Polishing	Dremel	
UR72ZA	Polishing	Magnetic York	
URMXN4	Visual	Stereoscope	
	Sanding	Sand paper	220
	Sanding	Sand paper	150
	Polishing	Dremel	
UUV6TG	Visual	Leica Table Mic	
UVQJNM	Polishing	Dremel	
UZY6AY	Visual		

TABLE 3

WebCode	Method	Tool Used	Grit Size
V3HKWC	Polishing the area to a mirror shine and smooth	Jewellers Drill PM 1	120 grit, 32 mm
V9QRV3	Visual Polishing	Magnifying Rotary Tool	
VGMMW8	Polishing	Magnetic York	
VLEQPC	Take exhibit part (Item 1) to etching room Sand-down area to be etched Polish area to a shining smooth appearance	Dremmel	600 Grit, 32mm dia, sic paper
VR2UGE	Polishing Cleaning	Dremel Water	
VUMM63	Polishing Cleaning	Rotary Tool Acetone	
VUQ22C	None		
VUUNG4	Visual Polishing	Stereoscope Sanding Sticks	120-420-640
VZFPD9	No additional preparation done. Used sample in condition it was received		
W3JKT6	Polishing	Dremel	
W64KWR	Sandpaper Polishing	Sandpaper Dremel	150
W8UNPY	Polishing	Rotary Tool	
WK2W8G	Visual	Stereoscope	
WKLDMJ	Polishing	Dremel	
WL92WY	Polishing	Dremel	
WM6G7B	Polishing	Dremel	
WMJ3HX	Polishing	Dremel	

TABLE 3

WebCode	Method	Tool Used	Grit Size
WYZG7T	Visual	Naked Eye	
	Visual	Stereoscope	
	Visual	Microscope	
	Sanding	Steel wool	
	Sanding	Sand paper	320
	Polishing	Dremel	
WZ9XWC	Visual	Stereoscope	
X3GAED	Light sanding to remove roughness	Dremel	(coarse) 180 grit
XB8VHQ	Polishing	Dremel	
XDDF7Q	Polishing	Rotary Tool	
XFZVX8	Polishing	by hand	paste
XGVFMR	Sanding	Sand paper	3m medium
XJ2ZDD	Cleaning with acetone	Cotton wool	
	Sanding	Dremel	Medium 220 grit
XJNK67	Cleaning	Acetone	
XLB2HK	Polishing	Dremel	Flap Wheel
	Polishing	Sand paper	800
	Polishing	Sand paper	1200
XM8GUG	Visual	Stereoscope	
	Sanding		400
	Polishing	Dremel	
XNTAJ6	Polishing	Dremel	
XRE69J	Polishing	Dremel	
XX23QE	Sanding, polishing	Powertool grinder	medium
XXLH4V	None		
Y4NZ6U	Visual	Stereoscope	
YDB2GW	Visual	Stereoscope	
YGBAPD	Sanding	Dremel	220 and 400
YJHRNA	None		
YPMH39	Cleaning with Acetone	Cotton swab	



TABLE 3

WebCode	Method	Tool Used	Grit Size
YREC76	I visually inspected the stainless steel bar exhibit		
YVCXT2	Sanding	Sand paper	1000, 360, 220
YW22L9	Visual	Stereoscope	
	Cleaning	Acetone	
	Sanding	Sand paper	100, 120
	Polishing	Sand paper	220
YWHFRW	Polishing	Dremel	
	Polishing	Sand paper	400
YZA6KQ	Polishing	Rotary Tool	
Z4GFQP	Visual	Naked eye	
	Visual	Stereoscope	
	Polishing	Dremel	
	Sanding	Sand paper	320
	Sanding	Sand paper	600
	Polishing	Steel wool	
Z4KZFD	Polishing	Dremel	
Z7A4CQ	Polishing	Sand paper	120 and 600
ZXUC28	Polishing area to be etched to mirror shine and smooth	Jewellers Drill PMI	120 grit 32mm (rough paper)
	Rough sand paper is attached to the dremel drill		

## Response Summary

Participants: 151

### Sample Preparation

Visual Method: 81

Sanding Method: 81

Polishing Method: 154

None: 30

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
26WUXY	Acidic Ferric Chloride applied using cotton swabs	Swiping motion over obliterated area for 15 minutes
2BGRQT	Magnetic Particle Inspection (MPI) Fry's Reagent	5-minutes
2EFJ84	Ferric Chloride	Total 20 seconds
	10% Nitric Acid	Total 20 seconds
	Acidic Ferric Chloride	Total 10 minutes
2GLVCK	Electro-magnetic	
2JBZ9X	Fry's Reagent	Approximately 2 minutes
2JDPBA	Fry's Reagent	approximately five minutes
	25% Nitric Acid	approximately one minute
2PGVQD	Fry's Reagent	
2R4JZR	Turner's Reagent	30 Mins
	Fry's Reagent	5 mins
	Alternating Turner's and Fry's Reagents	15 Mins
2WENY8	Ferric Chloride	Chemical etching by way of these acids, in that order, for ten seconds each
	Acidic Ferric Chloride	
	Nitric Acid	
	Magnetic Particle Inspection	
	MagnaFlux	
36AMAT	Ferric Chloride	5 - 10 seconds (approximately)
	Acidic Ferric Chloride	5 - 10 seconds (approximately)
	25% Nitric Acid	5 - 10 seconds (approximately)
	10 % Sodium Hydroxide	10 seconds (approximately)
	Ferric Chloride	35 seconds (approximately)
	Acidic Ferric Chloride	40 - 45 seconds (approximately)
3A4KXJ	Acid Etch Method	all acids used attempted several times for 2-3 minutes at a time
3CPQVL	Fry's Reagent	8 minutes
3EVXCT	Fry's Reagent	15 MIN.
3HV7JN	MagnaFlux	

TABLE 4

WebCode	Method	Time
3TRCCM	Fry's Reagent	twenty minutes
3UNTMX	Fry's Reagent	2 minutes per applicater x 6 applicaters
3Y2DV6	MagnaFlux Fry's Reagent	few minutes
42NHUU	MagnaFlux	
49JH9M	Acidic Ferric Chloride 20% Nitric Acid Solution	approx 15-30 seconds per application approx 15-30 seconds per application
4M4R6Z	Clean cotton wool swab using 10% sodium hydroxide solution	
4NJ39Y	MagnaFlux Acid Etch Method MagnaFlux	less than or equal to 5 minutes
4UHZ72	Acid Etch Method Ferric Chloride Acidic Ferric Chloride	20 Minutes 10 Minutes 10 Minutes
4WAMCC	Fry's Reagent NaHCO <sub>3</sub>	30 second increments for 30 minutes alternating with acid application in 10 second increments for 30 minutes
62W4TU	Ferric Chloride Acid Ferric Chloride Sodium Hydroxide Fry's Reagent Turner's Reagent Davis Reagent Nitric Acid	Two minutes Two minutes Two minutes Less than a minute Less than a minute Less than a minute Less than a minute
62ZGN4	Ferric chloride Acidic Ferric Chloride Aluminum solution (25% sulfuric acid) Polishing Ferric chloride w/ Acidic Ferric Chloride	1-3 minutes 1-3 minutes 1-2 minutes -1 minute 3-5 minutes

TABLE 4

WebCode	Method	Time
64RBNT	MagnaFlux	
	Turner's Reagent	2 minutes
	Davis' Reagent	2 mins
	Fry's Reagent	1.5 mins total - several short applications
	Acidic Ferric Chloride	10 mins
6DR98M	Fry's Reagent	Continually rubbed with fresh swabs
6E36FX	Miproacies	30 min.
6GTAA6	MagnaFlux	
6JE32Y		
6MKGRD	Acid Etch Method	M8V1 - HCl and NaOH (20 mins each) post 1500 grit wet and dry
	Fry's Reagent	M9V1 - 45-50mins
6NDAR3	Acid Etch Method	7x45"
6RTW3M	Fry's Reagent	5 minutes
6XXMHL	MagnaFlux	
74GDGL	Magnetic Particle Inspection (MPI)	
79FHJ7	Davis	~10 minutes
	Fry's	2-3 passes (< 1 min total)
7B2B8U	MagnaFlux	
	Acid Etch Method	2.5 MINUTES HNO3
	Acid Etch Method	2 MINUTES HCL
	Fry's Reagent	1 MINUTES
7CANPW	Acid Etch Method	One (1) minute
7GCAUL	Electro-magnetic	
7KQY6H	Acid Etch Method	2 min.
7LGDFD	Fry's Reagent	~ 10 Minutes
	Turner's Reagent	~ 10 Minutes
7PGC4K	MagnaFlux	
7QWQ4	MagnaFlux	
8ALMAZ	Fry's	20-30 seconds
	Ferric Chloride	20-30 seconds
8BVJQX	Acid Etch Method	15 minutes

TABLE 4

WebCode	Method	Time
8CAWLM	Modified Fry's	Approximately 1 min
	20% Nitric Acid	Approximately 1 min
8CDFAP	Acidic Ferric Chloride	45-60 Minutes
8MTDAM	Fry's Reagent	< than 5 mintues
8PYXXM	Magnetic Particle Inspection (MPI)	
	Davis Reagent	2-5 minutes
	Fry's Reagent	2-5 minutes
8QBGZ6	4.1 Acid etching with low voltage current connected to plate and application rod covered with cotton wool dipped in etching acid	Acid was applied until serial number became visable (+- 2 min) (wipe on with cotton wool)
9G2M3H	Ferric Chloride	
	Acidic Ferric Chloride	
	Turner's Reagent	~2 min per application
	Fry's Reagent	~1 min per application
9L9ZYV	Acidic Ferric Chloride	10 minute
9NHYPK	MagnaFlux	
9PEGHK	Modified Fry's Reagent	1 minute
	10% Sodium Hydroxide	1 minute
	Modified Fry's Reagent	1 minute
	20% Nitric Acid	1 minute
	Modified Fry's Reagent	1 minute
9V37W3	Acid Etch	+/- 1 min 30 sec
9X3EXR	MagnaFlux	not used
9X7RU2	Davis	5-10 sec.
	Turner's	5-10 sec.
	Fry's	5-10 sec.
9YYRLK	Fry's Reagent	Continuous wiping with moistened swab for several minutes
9ZAP2M	Magnetic Particle Inspection (MPI)	
A2Q2JR	Fry's Reagent	Approximately 35 minutes of swabbing the chemical onto the area
A7JZXN	Fry's Reagent/H2O	7 seconds
	Fry's Reagent/H2O	10 seconds
	Fry's Reagent/H2O	15 seconds

TABLE 4

WebCode	Method	Time
A8U687	Acidic Ferric Chloride Acid Etch Method	multiple applications approx 10-30 seconds Ferric Chloride, multiple applications approx 10-30 seconds
A92KFW	MagnaFlux	10-30 seconds
AACBHL	MagnaFlux	
ABMBG2	Green Mamba White colour background Black magnetic steel files Cleaning agent	Three minutes
ACHW7L	MagnaFlux	
ADX7AK	Aluminum Alloy 1 & 2, Zinc Alloy, Nitric Acid, Ferric Chloride, Acidic Ferric Chloride, 50% HCL, re-application of Ferric Chloride and Nitric Acid.	Acidic Ferric Chloride 1 hour
AE6BY3	Electric Magnatic Acid Etch	
AFKUJZ	HCl Acidic Ferric Chloride Fry's Reagent	1 min 1 min 5 min
AFMDUH	Alternated between swabs of Acidic Ferric Chloride (3 swabs) and 20% Nitric Acid (2 swabs)	Swiped across area a few times w/ each swab
AGDTTR	MagnaFlux	
AGF7PZ	Fry's	5 minutes
AJ7D8C	Fry's Reagent	1 minute
AQHNZ4	Ferric Chloride	~15 minutes
AUX9WQ	Fry's Reagent	10 minutes
B3DY9B	Magnetic Particle Inspection (MPI) Fry's Reagent Forensic Sil Cast	5 minutes
B47WJ	MagnaFlux	
B79ZYQ	Fry's Reagent Fry's Reagent Acid Etch Method	1 minute 1 minute 1 minute

TABLE 4

WebCode	Method	Time
BA7LQU	Acid Etch Method	Solution #1, 5 minutes
	Acid Etch Method	Solution #2, 5 minutes
	Acid Etch Method	Solution #3, 5 minutes
	Acid Etch Method	Solution #3, 5 minutes
BCFJ9H	MagnaFlux	
	Fry's Reagent	5-10 seconds
BE2BAL	MagnaFlux	
	Electro-magnetic	
BJYMFK	Chemicals- non magnetic	
	Ferric Chloride	10-15 sec.
	Acidic Ferric Chloride	10-15 sec.
	25% Nitric Acid	10-15 sec.
BMV3K2	Acid etching	+/- 1 min
BQY8HF	Fry's Reagent	< 1 min
BUME7J	MagnaFlux	
	Fry's Reagent	10 seconds each application
BZKFUP	MagnaFlux	
	Acid Etch Method	~ 20 min
	MagnaFlux	
	Acid Etch Method	~ 20 min
	MagnaFlux	
	Acid Etch Method	~ 20 min
	MagnaFlux	
	Acid Etch Method	~ 20 min
	MagnaFlux	
	Acid Etch Method	~ 20 min
	MagnaFlux	
	Acid Etch Method	~ 20 min
	MagnaFlux	
	Turner's Reagent	~ 5 min
	Acid Etch Method	~ 20 min
	MagnaFlux	
Acid Etch Method	~ 20 min	
Turner's Reagent	~ 5 min	
Acid Etch Method	~ 20 min	
MagnaFlux		

TABLE 4

WebCode	Method	Time
BZNTPY	Fry's Reagent	10 seconds each time, for 3 times
C3QZHQ	Magnetic Particle Inspection (MPI)	
C9XJQG	MagnaFlux	
	Modified Fry's Reagent	3 minutes
	10% Nitric Acid	2 minutes
	Modified Fry's Reagent	2 minutes
CA9JRG	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	~ 3 minutes
CCV82W	Electro Magnetic Etch	
CJQA2M	Chemical process using Fry's Reagent	1 minute
CKUMWV	Fry's Reagent	1 min 30 s
CMWL73	Fry's Reagent	
CQELM4	MagnaFlux	
CTD9RR	Fry's Reagent	5 minutes
	Acid Etch Method	2 minutes
CUER7G	Fry's Reagent	1-2 minutes
CZ4AKR	Ferric Chloride	2-3 minutes
	Acidic Ferric Chloride	2-3 minutes
D97ZCT	Ferric chloride	
	Acidic Ferric Chloride	10 minutes
DAL9QN	Hydrofluoric Acid solution	Several minutes
	Acidic Ferric Chloride solution	Several minutes
	Hydrofluoric Acid solution	1 minute
DEFAR3	Fry's Reagent	~15 seconds per application. ~10 applications
DFQAPW	Fry's Reagent	30 seconds
DG23GP	Etching reagent: Cupric Ammonium Chloride solution	
DJ8N7B	Sirchie Restor A Gel	25 min total
DK6XZT	Fry's Reagent	20 minutes



TABLE 4

WebCode	Method	Time
DVJTFR	Fry's Reagent	60 seconds of swabbing
	25% Nitric Acid	15 seconds of swabbing
	Fry's Reagent	60 seconds of swabbing
	25% Nitric Acid	15 seconds of swabbing
DWGAHG	Fry's Reagent	~ 1 minute - switched to Griffin's
	Griffin Reagent	~5 minutes
	Turner's Reagent	~20 seconds - used to clarify Griffin's results.
E6Q2KK	Acid Etch Method	Sulfuric Acid - Swabbed 5 minutes
	Acid Etch Method	Dilute Fry's - Swabbed 10 minutes
	Fry's Reagent	Swabbed 10 minutes
EB8N6N	Ferric Chloride/Rinse	Swabbed on then rinse off
	Ferric Chloride/Rinse	Swabbed surface
	Ferric Chloride/Rinse	Swabbed surface
	Acid Ferric Chloride/Rinse	Swabbed surface
	Ferric Chloride/Rinse	Swabbed surface
	Ferric Chloride/Rinse	2 mins
	Ferric Chloride/Dremel	Swabbed surface
EBH97D	Fry's Reagent	10-15 min total
EFAFNM	Acid Etch Method	25% Nitric acid; left on material for approx. 3-10 seconds
	Fry's Reagent	Left on material for approx. 3-10 seconds
	Base (10% Sodium Hydroxide)	10% NaOH; left on material for approx. 3-10 seconds
EKZPWY	Acidic Ferric Chloride	1-3 seconds
	Ferric Chloride	
EX6WMP	Acid Etch Method	At Interval of 1-2 minutes
F8B8HL	Fry's Reagent	About 15 minutes
FBU8VG	MagnaFlux	
FDFZNB	Fry's Reagent	45 seconds
FF2X28	Ferric Chloride	worked for 7 minutes
	Acidic Ferric Chloride	worked for 40 minutes total
FHTRZX	MagnaFlux	

TABLE 4

WebCode	Method	Time
FK24JK	Acidic Ferric Chloride	30sec - 1 min several times
	Phosphoric Acid/ Nitric Acid	30-45sec several times
	15% Nitric Acid	1-2 min several times
	Fry's Reagent	30 sec - 1 min several times
FNJ42K	Ferric Chloride	~30 seconds
	Fry's Reagent	~45 seconds
	Polish (Dremel)	
	Ferric Chloride	~30 seconds
	Fry's Reagent	~90 seconds
	Ferric Chloride	~30 seconds
	Fry's Reagent	~120 seconds
FQKJXP	Fry's Reagent	
FQL298	Ferric chloride	3-4 minutes
	Acidic Ferric Chloride	3-4 minutes
	Nitric acid	2-3 minutes
FQL3CD	Magnetic Particle Inspection (MPI)	
FT9TAC	MagnaFlux	
FWE74W	Fry's	until dark color change removed > 1 min
	Davis	until dark color change removed > 1 min
G2HGKP	Magnetic Particle Inspection (MPI)	
G44AMJ	MagnaFlux	
G9UXRP	Ferric Chloride	
	Acidic Ferric Chloride	less than a minute
GDVRY8	Sodium Hydroxide	~ 3 minutes
	Ferric Chloride	~ 5 minutes
	Nitric Acid	~ 1 minute
GFHHZB	HNO3 25%	1.5 hours
	Ferric Chloride	1.5 Hours
GH8MWP	Electro-chemical acid method	30 seconds
GHJJ3U	Magnetic Process	
GJW7K9	Acidic Ferric Chloride	less than four (4) minutes
	25% Nitric acid	less than four (4) minutes
GMEBBQ	Acid etching method	+/- 30 seconds

TABLE 4

WebCode	Method	Time
GV8LKL	Electro magnetic etching method	
H8KXJ2	Davis' Reagent	10 minutes
	Turner's Reagent	15 minutes
HCTLW4	Turner's Reagent	5 minutes
	Davis' Reagent	30 minutes
	Phosphoric/Nitric Acid	5 minutes
	Ferric Chloride	10 minutes
	Acidic Ferric Chloride	10 minutes
	Ferric Chloride in Concentrated HCl	10 minutes
	Fry's Reagent	30 minutes
HFHQUG	Davis/Turner's/Fry's	approx 30 seconds total
HG79KG	Fry's Reagent	approximately 5 minutes
HL6J2A	Nitric Acid 25%	5 min.
	Fry's Reagent 100% (cloth/cotton patch)	8 min.
HLKW8Y	Fry's Reagent	One hour.
HLZ7A8	Fry's Reagent	~1 minute
HNQA3E	MagnaFlux	
HQWMVE	MagnaFlux	
HTHGM9	Fry's Reagent	30 seconds
J4HHNJ	Fry's Reagent	~ 5 Minutes
JBY6A9	Electro-acid	
JNLAFJ	The sample was eaten away using chemical solution $\text{CuCl}_2 \times 2\text{H}_2\text{O} + \text{HCl} + \text{H}_2\text{O}$	time 10 min.
JNPMCT	10% Sodium Hydroxide (lot#111314CT)	approx. 1 minute
	25% Nitric Acid (lot#081816CR)	approx 1 minute
	Fry's Reagent	approx 1 minute
JTWDGJ	Davis' Reagent - Electrochemical	10-15 minutes
JWYCPR	Fry's Reagent	5 minutes
K3ZYUC	MagnaFlux	
K7G6T8	MagnaFlux	

TABLE 4

WebCode	Method	Time
KAYADN	Aluminum solution	20 sec
	Sodium Hydroxide	20 sec
	Phosphoric/nitric acid	20 sec
KC8EZK	Etching using cupric chloride solution	
KCL2ET	Electro magnetic process	
KKHR4A	MagnaFlux	n/a - magnaflux before and after polishing
KNEJQD	Fry's Reagent	Five (5) minutes
KNG32U	Fry's Reagent	Various lengths of times
KQ4QBA	MagnaFlux	
	Griffin Reagent	app. 15 minutes
	Acidic Ferric Chloride	app. 5 minutes
KUL2AY	Fry's Reagent	1-2 min
KW9UYM	Chemical etching - Application of Acid Copper II Sulphate with a cotton-tipped swab and allowed time to react.	Twenty-six (26) minutes
KZQV64	Ferric Chloride	~15 min
	Ferric Chloride	~5 min
L4QBE4	Fry's Reagent	approximately 1 minute
L7DYNH	Electro-acid	3 minutes
LAGLP2	Fry's Reagent	multiple ~10 sec increments
LCM7C2	Acidic Ferric Chloride	10 min.
LF67U3	Fry's Reagent	10 minutes
LHQA3Z	MagnaFlux	
LHRWV8	MagnaFlux	
LKDZ46	MagnaFlux	
LKWKDH	Electro-magnetic	
LQLZ2P	Magnetic Particle Inspection (MPI)	Not Applied
LTWXGR	Chemical Etching with Ferric Chloride	(Approx 5-25 seconds) Repetitive saturated swabs with water swabs btw
LWV9B7	Acidic Ferric Chloride	2 minutes
LWBRXP	Fry's Reagent	5-7 minutes

TABLE 4

WebCode	Method	Time
LWV9ED	Acid Etch (Griffin)	till turned dark ~ 1-1.5 minutes at a time till readable
LXHYCB	Electrolutic process of etching by acid mixture (5 grams of FeCl <sub>3</sub> , 50 ml of cc. HCl and 100 ml of water)	few minutes (2-3)
M6KGD9	Acid Etch Method Fry's Reagent 25% Nitric, Phosphoric Nitric	alternating 1-3 minutes
M6W6N9	Turner's Reagent Fry's Reagent AQUA-REGIA	5 MINUTES 5MINUTES 5 MINUTES
MB848E	MagnaFlux	~1 min
MH4786	Acidic Ferric Chloride Fry's Reagent 25% Nitric Acid	Between all of the chemicals used approx one hour total time
MKPW9A	Acid Etch Method	different acids, all in all about 15 minutes
MQG22D	MagnaFlux	
MVR7Y8	Magnetic Particle Inspection (MPI)	
MYRCHJ	Restor-A-Gel - Steel	25-30 minutes combined time
N2DJG7	Fry's Reagent	1 minute
N2VJAB	MagnaFlux (fully restored serial # C472B5)	
N8HGQB	Magnetic Particle Inspection (MPI) Fry's Reagent	15 min
NANUJ7	Ferric Chloride Acidic Ferric Chloride	3 minutes 2 minutes
NHKLUK	Magnetic Particle Inspection (MPI)	
NL26XN	MagnaFlux	
NNTXWD	Ferric Chloride Acidic Ferric Chloride 25% Nitric Acid	~10 seconds ~5 seconds ~5 seconds
NY9PKM	Fry's Reagent	30 seconds

TABLE 4

WebCode	Method	Time
P2UUTK	Acidic Ferric Chloride	3 minutes
	Acidic Ferric Chloride	5 minutes
	Immersion Oil	
	Sodium Hydroxide	10 minutes
	Acidic Ferric Chloride	3 minutes
	Clear Nail Polish	
P4FMLE	Electro magnetic etching process	
PEJTKM	Acidic Ferric Chloride	~10 seconds
PELLFA	MagnaFlux	
PFVTGG	Acid Etch Method	5 sec
	Fry's Reagent	10 sec
PHGJHL	Ardrox 8901W; white background lacquer was shaken for 10-15 seconds and sprayed over the area and allowed to be dry. Then Ardrox 800-3 black magnetic ink was sprayed over the area while still magnetised: The defects was inspected on good artificial light and serial number C472B5 was determined.	
PJU4E3	Acid Etch Method	2 minutes
PP38MP	MagnaFlux	
	Fry's Reagent	Applied with swabs and wiped away over 5 min period
PPDA83	Modified Fry's Reagent	1-2 seconds per swab, 20 swabs
	20% Nitric Acid	1-2 seconds per swab, 20 swabs
	Acidic Ferric Chloride	1-2 seconds per swab, 20 swabs
PTVEXK	Nitric Acid	approximately 15 seconds
	Davis Solution	approximately 15 seconds
	Turner's Reagent	approximately 10 seconds
	Turner's Reagent	approximately 15 seconds
	Fry's Reagent	approximately 5 seconds
	Fry's Reagent	approximately 5 seconds

TABLE 4

WebCode	Method	Time
PURUAH	"Electro-Acid etching method using cotton swab around the negative pole attached to stainless steel rod, positive pole attached on the metal plate. Electric current flow from the transformer. Fry's, MagnaFlux & Acid Etch, starting with a low current and adjust-systematically to higher settings. Few minutes +/- 10". The experiment was a success	
PV3YJZ	Fry's Reagent	5 minutes
PZFG6M	Electro Magnetic Process: Cleaned the area with alcohol to remove dust, sand the area with coarse paper and polish it then spray white background lacquer leave it to dry then attach the bar to the legs of Grammatech Machine to magnetise it, spray magnetic Inspectio Fluid or Blank Ink Supramer, leave it for 10-15 seconds to develop the number. Remove the bar and clean it with alcohol. Spray it with Trisol to prevent rust.	
Q3DH3Z	Ferric Chloride Modified Fry's sol.	10 min. 2 min.
Q3X7PC	Acidic Ferric Chloride	Approximately 10 minutes of intermittent swabbing
Q6KXQG	Acid Etching method	+/- 35 seconds
QBC8W9	Ferric Chloride Acidic Ferric Chloride	
QC6NJ4	MagnaFlux	
QD24VZ	Griffin Reagent Fry's Reagent	~1 minute ~1 minute
QEDYF8	MagnaFlux Acid Etch Method MagnaFlux	2 minutes
QF4EFG	Acid Etch Method Ferric Chloride Acidic Ferric Chloride	17 minutes 7 minutes 10 minutes
QF6WPY	MagnaFlux	

TABLE 4

WebCode	Method	Time
QHTKZE	Chemical treatment using 5% Sodium Hydroxide solution for 15 minutes followed by:	15 minutes
	Electro chemical treatment using Cupric Ammonium Chloride solution for 8 minutes	8 minutes
QJ67WU	Fry's Reagent	Approximately 2 minutes
QMATD6	Ferric Chloride	16 minutes
	Acidic Ferric Chloride	3 minutes
QRKWEF	Electro-acid etching	was removed immediately after recovering the serial number, but during the process it was left for 10 seconds
QVGH6H	The Electro Magnetic Process: cleaned the area with alcohol to remove dirt, sand down the area with coarse papers; polished the area with fine papers. Sprayed thin layer of white background lacquer (non chlorinated) on the area, leave it for few seconds to dry, attached the bar steel on one leg of the yoke (gammatec machine) to magnetise the area. Shaked the magnetic suspension (supramor blank ink) applied 2-3 drops on magnetised area. Leave it for 10's-15's to develop the number. Removed the contrast spray with alcohol. Applied thin layer of oil to avoid rust. No acidic method was used.	No acidic method was used
QVYMMG	Fry's Reagent	10 minutes
QVYQUD	Magnetic etch	
R4TYCH	MagnaFlux	
RAFYG3	Ferric Chloride	1 minute
	Acidic Ferric	1 minute
	Fry's	1 minute
RCKGP7	Davis Reagent	A few seconds per swab.
	Turner's Reagent	A few seconds per swab.
	Fry's Reagent	A few seconds per swab.
	Nitric Acid 25%	A few seconds per swab.



TABLE 4

WebCode	Method	Time
RGX8ZR	Acidic Ferric Chloride	30 sec.
	Nitric Acid 25%	30 sec.
	Fry's Reagent	1 minute
RHAY3G	Adler reagent	
RPM6GZ	Magnetic Particle Inspection (MPI)	
	Polish (Dremel)	
	Magnetic Particle Inspection (MPI)	
RRCC2W	Fry's Reagent	Approximately 5 minutes
RXMXQ	Fry's Reagent	20 minutes
T49TE6	MagnaFlux	
T9XEYC	Electro Magnetic Etching process	
TL7TM4	10% Sodium Hydroxide	
	Fry's Reagent	a couple minutes at a time
TLHU3B	Electro-magnetic	
TNQ3BV	MagnaFlux	
TREAZY	Fry's Reagent	5 minutes
TW8DT3	Acid Etch Method	10% Sodium Hydroxide - 10 minutes
	Acid Etch Method	Ferric Chloride - 10 minutes
	Acid Etch Method	50% Hydrochloric Acid - 10 minutes
	Acid Etch Method	Ferric Chloride - 5 minutes
U3Q4NW	(1) Griffin's	< 10 sec
	(2) Ferric Chloride	< 10 sec
	(3) Fry's	< 10 sec
	(4) 10% Sodium Hydroxide	< 10 sec
	Alternating (4) & (2)	< 10 sec each
	Alternating (2), (4) & (1)	< 10 sec each
U6FA9U	Fry's Reagent	5 min
	Ferric Chloride	5 min
UE3D8F		
UGMFYL	MagnaFlux	

TABLE 4

WebCode	Method	Time
UJZPCT	Fry's Reagent	2 minutes
	Nitric Acid 25%	2 minutes
	Fry's Reagent	2 minutes
	Nitric Acid 25%	4 minutes
UK6LA3	Acid Etch Method	One (1) hour
UMVTUY	Turner's Reagent	1 MINUTE
	Fry's Reagent	2 MINUTES
	AQUA REGIA	1 MINUTE
UR72ZA		
URMXN4	Davis Reagent	
	Turner's Reagent	
UUV6TG	Electro-magnetic	
UVQJNM	MagnaFlux	
UZY6AY	MagnaFlux	
V3HKWC	Acid Etching method	+/- 30 seconds
V9QRV3	Fry's Reagent	Five (5) minutes
VGMMW8		
VLEQPC	Electro-Acid Process Attach Positive Pole of the electric etching apparatus to the exhibit - wrap cotton around the Negative Pole - Dip cotton in Green Mamba - Rub saturated cotton repeatedly in one direction over the area - Examine area under angled light source - number legible, record number clean area, - Apply thin layer of oil on obliterated area. +/- 10-15 seconds. Removed immediately after number is retrieved.	
VR2UGE	Phosphoric Acid	2 minutes
	25% Nitric Acid	2 minutes
	Fry's Reagent	30 seconds
VUMM63	Fry's Reagent	3-5 minutes
VUQ22C	Fry's	3 minutes
VUUNG4	Fry's Reagent	2-3 minutes while swabbing

TABLE 4

WebCode	Method	Time
VZFPD9	Electro-Magnetic Process used	
W3JKT6	Acidic Ferric Chloride	swipes for 3 min
	Acidic Ferric Chloride	swipes for 5 min
	Phosphoric/ Nitric Acid	swipes for 10 minutes
	Sodium Hydroxide	swipes for 5 min
W64KWR	Fry's Reagent	less than 5 mins
	Nitric Acid	less than 5 mins
W8UNPY	Fry's Reagent	Until number prepared
WK2W8G	Turner's Reagent	3 minutes
	Fry's Reagent	5 minutes
WKLDMJ	MagnaFlux	
WL92WY	Fry's Reagent	5 MINUTES
WM6G7B	Fry's Reagent	2 min
	Turner's Reagent	2 min
	Davis's Reagent	2 min
	Acid Nitric's Reagent	2 min
WMJ3HX	Acidic Ferric Chloride	2 MINUTES
	AQUA REGIA	2 MINUTES
	Fry's Reagent	12 MIN TOTAL MULTIPLE APPLICATIONS
WYZG7T	Davis Reagent	20 seconds
	Turner's Reagent	60 - 90 seconds
WZ9XWC	MagnaFlux	
X3GAED	Electro-Magnetic Process	
XB8VHQ	Acidic Ferric Chloride	2 minutes
XDDF7Q	Fry's Reagent	5 minutes
	Fry's Reagent	5 minutes
XFZVX8	Acid Etch	2 min.
XGVFMR	Fry's Reagent	7 minutes
XJ2ZDD	Electro-magnetic etching process	
XJNK67	Acid Etch Method	5 minutes
XLB2HK	Fry's Reagent	25 Minutes

TABLE 4

WebCode	Method	Time
XM8GUG	Acidic Ferric Chloride	5 minutes
	Turner's Reagent	10 minutes
	Fry's Reagent	5 minutes
	Acidic Ferric Chloride	3 minutes
XNTAJ6	Ferric Chloride	10s, 30s, 30s
	Acidic Ferric Chloride	20s, 30s, 30s, 30s, 30s, 30s
XRE69J	MagnaFlux	
XX23QE	Electro-magnetic	
	Electro-Acid Etching	1 minute
XXLH4V	Magnetic Particle Inspection (MPI)	
Y4NZ6U	MagnaFlux	
YDB2GW	Acidic Ferric Chloride	~25 minutes in total
	Nitric Acid	~ 5 minutes in total
	Hydrochloric Acid	~ 5 minutes in total
YGBAPD	Ferric Chloride	less than a minute
	Acidic Ferric Chloride	less than a minute
	10% Sodium Hydroxide	less than a minute
	Davis' Reagent	1 to 5 minutes
	Fry's Reagent	1 to 5 minutes
	25% Nitric Acid	1 to 5 minutes
YJHRNA	MagnaFlux	
YPMH39	Acidic Method - Turner's Reagent	10 minutes
	Acidic Method - Acid Copper II Sulphate	10 minutes
	Acidic Method - Fry's Reagent	10 minutes
YREC76	Electro magnetic process	
YVCXT2	Ferric chloride	Less five minute
	Acidic Ferric Chloride	less one minute
YW22L9	Acid Etch Method	Total: 7 minutes
	Ferric Chloride	3 minutes
	Acidic Ferric Chloride	4 minutes
YWHFRW	MagnaFlux	
	Magnetic Particle Inspection (MPI)	
YZA6KQ	Fry's Reagent	3-5 MINUTES

TABLE 4

<b>WebCode</b>	<b>Method</b>	<b>Time</b>
Z4GFQP	Turner's Reagent	approximately 2 minutes
	Fry's Reagent	approximately 5 minutes
Z4KZFD	Ferric Chloride	Not long
Z7A4CQ	Fry's Reagent	20 minutes
ZXUC28	Electro-chemical etching method	+/- 45 seconds

<b>Response Summary</b>		<b>Participants: 151</b>
<b>Recovery Methods</b>		
<b>Chemical Processing:</b>	<b>209</b>	
<b>Magnetic Processing:</b>	<b>97</b>	
<p>Note: The totals 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
3CPQVL	Fine and extra fine wheels used with Dremel tool for polishing were from Cratex Kit No. 777.
49JH9M	[From Table 4 Recovery Methods: "The Acidic Ferric Chloride was applied first to Item #1, and then the 20% Nitric Acid Solution was applied to Item #1. This process was repeated until the characters were restored."] The two solutions were applied each time with a fresh cotton swab. After restoration was complete and all characters were recovered the serial number area was wiped with a Kim wipe with acetone then a drop of Pem Oil was applied to the restored area.
4M4R6Z	The visual examination of the item revealed the presence of filing marks on the centre of the bar.
4NJ39Y	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
4UHZ72	The aluminum bar stock described in item 2, was used as a reference for size, shape and positioning of the stamped alphanumeric characters used in the obliterated serial number in the stainless steel bar stock, described in item 1.
79FHJ7	Portion of one character observed as received. Initially thought to be first character of SN, after restoration turned out to be the bottom arc of the "5" in the last position. To be clear, on previous page [Table 3: Sample Preparation] the visual exam preceded the sanding + polishing operations.
8ALMAZ	Two acids used in stated order. Repeated several times.
8BVJQX	I found filing marks on the area bearing the suspected obliterated serial number.
8QBGZ6	Electro-magnetic process could not be used due to the fact that the bar (stainless steel) is a non-magnetic metal.
9G2M3H	The material described as "stainless steel", is non-magnetic. This situation is quite uncommon (never encountered in 10+ years) in serial number restoration on firearms. Firearms examiners are trained to use one set of chemicals for magnetic (ferrous) metals and another set of chemicals for non-magnetic (non-ferrous) metals. The determination is made through the use of a magnet. the steel used in this proficiency should be made to be a similar material to what is seen in real cases. For example, steels should be magnetic, so as to avoid confusion in selecting the correct class of chemicals for restoration.

TABLE 5

WebCode	Additional Comments
9NHYP	Examination of Item 1 revealed a milled out area in the center of one side. Cleaning this area with a soft cloth and applying Magnaflux to this area within a magnetic field made the obliterated serial number legible.
9PEGHK	Expected reaction(s) from restoration reagents were observed.
9X3EXR	A test called SEM was carried out, in which it was determined that the cuissed material contains approximated mately 70 % Fe, Cr 19% and Ni 7.7 % among other elements.
ADX7AK	Multiple acids applied, with nil results. Greatest results observed following application of Acidic Ferric Chloride, which was left on Item #1 for approx. 1 hour. Characters fully and clearly developed after numerous additional applications of Ferric Chloride and Nitric Acid.
AGF7PZ	Serial number was revealed at 5 mn. Cleaned off acid @ 10 min.
AJ7D8C	Cupric Ammonium chloride was suggested for stainless steel. Cupric chloride was however used in the first instance due to personal success with this etchant in the past on this type of metal. If the numbers/letters weren't recovered with this etchant, copper ammonium chloride would have been tried. As it eventuated, the serial number was recovered after only a minute of application of the CuCl.
AUX9WQ	Polishing was performed and one ten minute application of Fry's reagent was used to reveal the obliterated number. The process was documented with photography.
BA7LQU	Acid restoration solutions #1 and #2 had no effect. After applying solution #3 the number started to appear after 3 minutes. I applied solution #3 a second time to further enhance the restored number. The process was documented with photography.
D97ZCT	The surface was sanded until it was mirror-like. The sequence was available to watch with the ferric chloride, but not so clear, thats the reason why the acidic ferric chloride was used.
EB8N6N	Reflective surface added to inability to read characters clearly.
FF2X28	Side lighting used to enhance my observations.
FK24JK	Images of outer envelope, inner envelopes, stainless steel bar stock and aluminum bar stock were taken using a digital camera. Inscribed "Item 1 [initials]" on back of Item 1 (stainless steel bar stock).
FQL3CD	we use magnetic yoke and wet magnetic powder
GH8MWP	Electro-chemical etching phase begin with the coupling of a light electrical current to the firearm. The positive pole is attached to the firearm, and the negative pole is attached to a stainless steel rod with a piece of cotton wool twisted around the tip. The cotton wool is dipped into an acid solution. Every time the rod touches the firearm, a small current will flow through the cotton wool and the aluminium steel. Start with a low current and adjust systematically to higher settings. Clean all the places with ethanol to remove all the acid in the exhibit and apply a thin layer of oil to avoid corrosion.
GMEBBQ	After the application of the etch process the surface must be thoroughly cleaned with an acid neutralizing agent and covered with oil to prevent unnecessary corrosion.

TABLE 5

WebCode	Additional Comments
HL6J2A	A final cotton swab w/ nitric acid 25% was used for clean up - Photographs taken of step by step procedures.
HLKW8Y	Casting of the machined surface with Reprosil casting medium, prior to the destructive etching process, was done to retain a physical representation of the machined surface.
JNPMCT	Frys Lot #021915CT
KAYADN	Chemical etching solutions used at different intervals.
KW9UYM	Digital Images were captured after recovery of the serial number.
LQLZ2P	Magnaflux : Non-destructive The sample is cover by a bag containing magnetic particle solution (magnaflux bath) to the serial number area while applying a magnetic filed through the use the horseshoe magnet. Magnaflux bath were prepared by using MAGNAVIS® 7 HF, WB-27, 1ml of W-27 in 50 ml of water.
MH4786	For future test, orientation (direction) or location of the obliterated area would be helpful. If using steel please have id attract to a magnet. This is a test conducted prior to restoration techniques applied. Helps indicate which chemicals should be used.
MKPW9A	After smoothening the surface softly with sand paper we rubbed the surface with acid saturated cotton swabs. The difficulty to reconstruct the serial number on this steel bar stock was comparable to the Zinc bar stock last year.
P2UUTK	Documentation photographs were taken prior to processing item #1 , and after each step of the restoration process.
PTVEXK	Between acid applications, the material was cleaned using water. The first application of Fry's Reagent revealed the complete serial number; however, the restoration was light. A second application of Fry's Reagent was performed to enhance the serial number.
Q6KXQG	Its very essential that after application of the etching process the obliterated area which was etched by acid (Green Mamba) be thoroughly cleaned with an acid neutralizing agent and covered with oil to prevent corrossion if not so acid will continue to react with the metal.
QBC8W9	I took photos of the revelated sequence
QF4EFG	The acid was constantly cleaned with delicate task wipers in order to have a clear view of the characters appearing with each step. To neutralize the bar stock from the acids, I used Sodium Bicarbonate.
QJ67WU	Two cycles (file, polish, Frys) were required.
QVYMMG	The surface was initially processed for 5 minutes with Fry's reagent and all of the characters were visible; however, the fifth character looked like it could possibly be a "5" or a "B". It was polished again and treated with Fry's reagent for 10 minutes. This time the fifth character was clearly visible to be a "B".
TLHU3B	Stainless steel bar stock was very lightly mildly - magnetic but the process of recovery was successfully executed.



TABLE 5

WebCode	Additional Comments
UJZPCT	After about 10 minutes of the acidic method all characters were visible.
UUV6TG	The intention and scope of this forensic examination comprise the following: 4.1 Techniques associated with the recovering and restoration processes of obliterated alpha-numeric figures on metals. 5. After application of the electro-magnetic process, I determined the serial number of the stainless steel bar stock mentioned in paragraph 3.1.1 as C472B5.
V3HKWC	After the application of the etch process the surface must be thoroughly cleaned with an acid neutralizing agent and covered with oil to prevent unnecessary corrosion.
V9QRV3	The Magnaflux technique yielded unsatisfactory results, so the Fry reagent was applied.
YW22L9	Methodology used: Microscopic Examination Chemical Restoration Process
Z7A4CQ	The polished surface was treated with Fry's reagent for about 20 minutes. The process (using Fry's Reagent) was alternate repeatedly several times, till the serial number was restored completely.
ZXUC28	The electro acid etching method is a compact and easy conveyable apparatus which can be used for office as well as field purposes to accelerate and improve the etching method. After etching the surface is thoroughly cleaned with acid neutralizing agent such as ammonia. An electro etching solution Green mamba is mainly used for metals with an iron content.

# Appendix: Data Sheet

Collaborative Testing Services ~ Forensic Testing Program

## **Test No. 17-5250: Serial Number Restoration**

DATA MUST BE RECEIVED BY March 20, 2017 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 SNR1):**

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?**

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**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**

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**Return Instructions:** Data must be received via online data entry, fax (please include a cover sheet), or mail by *March 20, 2017* 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](mailto:forensics@cts-interlab.com)  
[www.ctsforensics.com](http://www.ctsforensics.com)

Participant Code:

ONLINE DATA ENTRY: [www.cts-portal.com](http://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. **17-5250: Serial Number Restoration**

This release page must be completed and received by **March 20, 2017** 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.**

Page 4 of 4