



Serial Number Restoration

Test No. 23-5250 Summary Report

Each sample set contained a piece of bar stock with an obliterated serial number and an arrow for directionality. 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 requested to attempt to restore the obliterated serial number utilizing their laboratory recovery methodologies and report their findings. Data were returned from 273 participants and are compiled into the following tables:

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

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

Manufacturer's Information

Each sample set consisted of a piece of bar stock that contained an obliterated serial number 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 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 (E9NDK7).

SAMPLE PREPARATION: Each piece of cold rolled steel bar stock (Item 1) was stamped with six characters (E9NDK7), along with an arrow for directionality, and then obliterated by a grinding machine. Additionally, a piece of aluminum bar stock was also included in the sample as a reference standard with the alphanumeric characters 0-9 and A-F, H, J, K, and N. The characters were stamped in the same font and size as those on the steel bar stock.

SAMPLE SET ASSEMBLY: For each sample set, a steel bar stock and an aluminum bar stock were separately enclosed in chipboard, placed in their respective pre-labeled envelopes, and then packed into a larger sample set envelope and sealed.

VERIFICATION: All predistribution laboratories reported the expected responses and restored all six obliterated serial number characters. Chemical restoration methods were used by all predistribution laboratories.

Summary Comments

This test was designed to allow participants to assess their proficiency in the restoration of an obliterated serial number. Participants were provided with a piece of metal 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 attempt 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 six characters (E9NDK7). (Refer to Manufacturer's Information for preparation details).

In Table 1 Recovered Characters, 264 of the 273 responding participants (97%) restored the six characters (E9NDK7). Five participants restored five of the six characters, two participants restored four of the six characters, one participant restored three of the six characters, and the remaining participant could not restore any characters.

In Table 3 Sample Preparation, the most used preparation methods were polishing and visual. In Table 4 Recovery Methods, the majority of participants used a combination of both chemical and magnetic recovery methods. No trends were seen between the methods used and the challenges experienced by participants.

Recovered Characters

Please record the recovered characters below.

TABLE 1

Recovered Characters						
WebCode	Character 1	Character 2	Character 3	Character 4	Character 5	Character 6
24N7JV	E	9	N	D	K	7
286E8V	E	9	N	D	K	7
29XCDG						
2DC6A2	E	9	N	D	K	7
2GALMV	E	9	N	D	K	7
2JHGM2	E	9	N	D	K	7
2K9XHV	E	9	N	D	K	7
2P3U8L	E	9	N	D	K	7
2VU4GJ	E	9	N	D	K	7
2WJE7R	E	9	N	D	K	7
32Y6CM	E	9	N	D	K	7
33P9ZM	E	9	N	D	K	7
3NNULB	E	9	N	D	K	7
3QEXBC	E	9	N	D	K	7
3RT6WT	F	9	N	D	K	7
3UBJ2E	E	9	N	D	K	7
3UTD3P	E	9	N	D	K	7
3W3K6H	E	9	N	D	K	7
44VA2C	E	9	N	D	K	7
4LWTH9	E	9	N	D	K	7
4N3D9U	E	9	N	D	K	7
4TFD6L	*	9	N	D	K	7
624ECH	E	9	N	D	K	7
62MGKH	E	9	N	D	K	7
62P3GY	E	9	N	D	K	7
64Q9V6	E	9	N	D	K	7

TABLE 1

Recovered Characters						
WebCode	Character 1	Character 2	Character 3	Character 4	Character 5	Character 6
664P9H	E	9	N	D	K	7
68FCTH	E	9	N	D	K	7
6HATFX	E	9	N	D	K	7
6KYAMK	E	9	N	D	K	7
6QQA88	E	9	N	D	K	7
6TVXPH	E	9	N	D	K	7
6WQT7W	E	9	N	D	K	7
72JB2M	E	9	N	D	K	7
767U67	E	9	N	D	K	7
77WXU8	E	9	N	D	K	7
7C3P36	E	9	N	D	K	7
7DTRR6	E	9	N	D	K	7
7EUKRY	E	9	N	D	K	7
7FLNFY	E	9	N	D	K	7
7H89JH	E	9	N	D	K	7
7LPPE8	E	9	N	D	K	7
7MNTCP	E	9	N	D	K	7
7NGQHB	E	9	N	D	K	7
7PRL43	E	9	N	D	K	7
7QJHTW	E	9	N	D	K	7
7U2N9J	E	9	N	D	K	7
7UJTPW	E	9	N	D	K	7
7WRPCL	E	9	N	D	K	7
82YV6X	E	9	N	D	K	7
84LF9F	E	9	N	D	K	7
84NZ4W	E	9	N	D	K	7
87DDME	E	9	N	D	K	7
8ACMY2	E	9	N	D	K	7

TABLE 1

Recovered Characters						
WebCode	Character 1	Character 2	Character 3	Character 4	Character 5	Character 6
8DDN2K	E	9	N	D	K	7
8F2698	E	9	N	D	K	7
8FJD28	E	9	N	D	K	7
8XZDAQ	E	9	N	D	K	7
8YT9XK	E	9	N	D	K	7
99YHUC	E	9	N	D	K	7
9F94GK	E	9	N	D	K	7
9HY6NU	E	9	N	D	K	7
9LYDT6	E	9	N	D	K	7
9RT9WX	E	9	N	D	K	7
9UYQWE	E	9	N	D	K	7
9WHRUL	E	9	N	D	K	7
9Y8YF4	E	9	N	D	K	7
9YNDGL	E	9	N	D	K	7
9ZYBWN	E	9	N	D	K	7
A73JTJ	E	9	N	D	K	7
A74A9E	E	9	N	D	K	7
A9UKWL	E	9	N	D	K	7
AA3K4E	E	9	N	D	K	7
ACTVTL	E	9	N	D	K	7
ACUL8G	E	9	N	D	K	7
AEWQEA	E	9	N	D	K	7
AGKXZR	E	9	N	D	K	7
AKM2N8	E	9	N	D	K	7
AQAMZZ	E	9	N	D	K	7
AQAPP6	E	9	N	D	K	7
AQP7KX	E	9	N	D	K	7
AXDNZU	E	9	N	D	K	7

TABLE 1

Recovered Characters						
WebCode	Character 1	Character 2	Character 3	Character 4	Character 5	Character 6
AXPK8K	E	9	N	D	K	7
B2N327	E	9	N	D	K	7
B4VGQK	E	9	N	D	K	7
B6NEW7	E	9	N	D	K	7
B9MLKN	E	9	N	D	K	7
BAK3DD	E	9	N	D	K	7
BAMNAT	E	9	N	D	K	7
BDEWBE	E	9	N	D	K	7
BEEVUM	E	9	N	D	K	7
BPEHLJ	E	9	N	D	K	7
BT9JJR	E	D	N	0	K	7
BWXNHQ	E	9	N	D	K	7
C3VZRT	E	9	N	D	K	7
C9HRXZ	E	9	N	D	K	7
CB9UZ4	E	9	N	D	K	7
CFKWTQ	E	9	N	D	K	7
CH9D2D	E	9	N	D	K	7
CH9FQH	E	9	2	D	K	7
CHA4F9	E	9	N	D	K	7
CHABBA	E	9	N	D	K	7
CJJBEV	E	9	N	D	K	7
CKXHR	E	9	N	D	K	7
CNYJ3U	E	9	N	D	K	7
CPQK7X	E	9	N	D	K	7
CQJHCJ	E	9	N	D	K	7
CTQQK4	E	9	N	D	K	7
CUNYTM	E	9	N	D	K	7
D2JMKB	E	9	N	D	K	7

TABLE 1

Recovered Characters						
WebCode	Character 1	Character 2	Character 3	Character 4	Character 5	Character 6
D44C6N	E	9	N	D	K	7
D82V62	E	9	N	D	K	7
DA99TU	E	9	N	D	K	7
DFGEMF	E	9	N	D	K	7
DQVQHP	E	9	N	D	K	7
DZKH73	E	9	N	D	K	7
E2UKR2	E	9	N	D	K	7
EBYWH4	E	9	N	D	K	7
ED6CXL	E	9	N	D	K	7
EDQXL7	E	9	N	D	K	7
EFX9LF	E	9	N	D	K	7
EJWL6Y	E	9	N	D	K	7
EJXGQQ	E	9	N	D	K	7
EN7PAF	E	9	N	D	K	7
EPJG3W	E	9	N	D	K	7
EUWWUA	E	9	N	D	K	7
F8X9KT	E	9	N	D	K	7
FCR3KF	E	9	N	D	K	7
FEJ2YD	E	9	N	D	K	7
FGK4LU	E	9	N	D	K	7
FMUAFE	E	9	N	D	K	7
G28VLQ	E	9	N	D	K	7
GPUVPW	E	9	N	D	K	7
GRJ98E	E	9	N	D	K	7
GRKWW7	E	9	N	D	K	7
GUNWM6	E	9	N	?	K	7
HABPTN	E	9	N	D	K	7
HC3LGH	E	9	N	D	K	7

TABLE 1

Recovered Characters						
WebCode	Character 1	Character 2	Character 3	Character 4	Character 5	Character 6
HDWJM3	E	9	N	D	K	7
HFKQAK	E	9	N	D	K	7
HKDU24	E	9	N	D	K	7
HLP9U	E	9	N	D	K	7
HM6QPX	E	9	N	D	K	7
HQKHE7	E	9	N	D	K	7
HQNZKG	E	9	N	D	K	7
J6X4L3	E	9	N	D	K	7
J8NEBA	E	9	N	D	K	7
J8P6P6	E	9	N	D	K	7
JB4MYA	E	9	N	D	K	7
JCFKA6	E	9	N	D	K	7
JGC4FA	E	9	N	D	K	7
JKTNZ6	E	9	N	D	K	7
JMF84N	E	9	N	D	K	7
JN96A9	E	9	N	D	K	7
JT8EMW	E	9	N	D	K	7
JZRBR7	E	9	N	D	K	7
KFCKPT	E	9	N	D	K	7
KL2ZFK	E	9	N	D	K	7
KL3XQG	E	9	N	D	K	7
KQU684	E	9	N	D	K	7
KQU8T3	E	9	N	D	K	7
KQVZTV	E	9	N	D	K	7
KRM3GW	E	9	N	D	K	7
KT3CE4	E	9	N	D	K	7
KUD4KY	E	9	N	D	K	7
KYRUQU	E	9	N	D	K	7

TABLE 1

Recovered Characters						
WebCode	Character 1	Character 2	Character 3	Character 4	Character 5	Character 6
L6XQCE	E	9	N	D	K	7
LLGJZH	E	9	N	D	K	7
M3WEMP	E	9	N	D	K	7
MM869Z	E	9	N	D	K	7
MREXTX	E	9	N	D	K	7
MUNMH2	E	9	N	D	K	7
MVJGY7	E	9	N	D	K	7
N4QM9E	E	9	N	D	K	7
N8LEEP	E	9	N	D	K	7
NEAUAN	E	9	N	D	K	7
NF4HU6	B	9	N	D	K	7
NGB3CD	E	9	N	D	K	7
NHRY2R	E	9	N	D	K	7
NKGHQW	E	9	N	D	K	7
NM6WBZ	E	9	N	D	K	7
NNWZZZ	E	9	N	D	K	7
NQM244	E	9	N	D	K	7
NTTEV3	E	9	N	D	K	7
NTTHK8	E	9	N	D	K	7
NWP4AP	E	9	N	D	K	7
NYJRV7	E	9	N	D	K	7
P3D7VZ	E	9	N	D	K	7
PAVEGC	E	9	N	D	K	7
PB4QYD	E	9	N	D	K	7
PELXEZ	E	9	N	D	K	7
PVCTWH	E	9	N	D	K	7
PWKDC6	E	9	N	D	K	7
PXK4RZ	E	9	N	D	K	7

TABLE 1

Recovered Characters						
WebCode	Character 1	Character 2	Character 3	Character 4	Character 5	Character 6
PZ8MUJ	E	9	N	D	K	7
PZLA77	E	9	N	D	K	7
Q2W932	E	9	N	D	K	7
QV83YY	E	9	N	D	K	7
QVAL7A	E	9	N	D	K	7
QWG2E2	E	9	N	D	K	7
QWYYNT	E	9	N	D	K	7
R33DR9	E	9	N	D	K	7
R6UAF3	E	9	N	D	K	7
R9UM28	E	9	N	D	K	7
RAMK8T	E	9	N	D	K	7
RCAVP7	E	9	N	D	K	7
RD3TVR	E	9	N	D	K	7
RDK2JM	E	9	N	D	K	7
RDMKQX	E	9	N	D	K	7
RFA4UG	E	9	N	D	K	7
RHYHCY	E	9	N	D	K	7
RWH3WT	E	9	N	D	K	7
T2N77R	E	9	N	D	K	7
T6MP4J	E	9	N	D	K	7
T72RCD	E	9	N	D	K	7
T8UPHY	E	9	N	D	K	7
TBUZFK	E	9	N	D	K	7
TC8K9U	E	9	N	D	K	7
TQMRYZ	E	9	N	D	K	7
TRXPCG	E	9	N	D	K	7
TTQMH3	E	9	N	D	K	7
TUREXX	E	9	N	D	K	7

TABLE 1

Recovered Characters						
WebCode	Character 1	Character 2	Character 3	Character 4	Character 5	Character 6
TVFU6K	E	9	N	D	K	7
TXPVAR	E	9	N	D	K	7
U6HMQV	E	9	N	D	K	7
U7BFQA	E	9	N	D	K	7
UJHB4K	E	9	N	D	K	7
UJMNQG	E	9	N	D	K	7
UL9C8M	E	9	N	D	K	7
UMJAK6	E	9	N	D	K	7
V3THXD	E	9	N	D	K	7
V6HWGV	?	?	N	D	K	7
V6JJ2F	E	9	N	D	K	7
V89XKY	E	9	N	D	K	7
VCH7V2	E	9	N	D	K	7
VDBYQK	E	9	N	D	K	7
VZ7YVU	E	9	N	D	K	7
WAQPUR	E	9	N	D	K	7
WCD9XB	E	9	N	D	K	7
WH4J89	E	9	N	D	K	7
WK4YCP	E	9	N	D	K	7
WK7GH2	E	9	N	D	K	7
WMV2J	E	9	N	D	K	7
WMXD8V	E	9	N	D	K	7
WPLW6M	E	9	N	D	K	7
WPPEBX	E	9	N	D	K	7
WRT86W	F	9	5	0	K	7
X42A4Y	E	9	N	D	K	7
X6U8AK	E	9	N	D	K	7
X8ZNQP	E	9	N	D	K	7

TABLE 1

Recovered Characters						
WebCode	Character 1	Character 2	Character 3	Character 4	Character 5	Character 6
XA6DRC	E	9	N	D	K	7
XAN8NF	E	9	N	D	K	7
XDMHJF	E	9	N	D	K	7
XFRBCT	E	9	N	D	K	7
XGJ7ZM	E	9	N	D	K	7
XKL3R4	E	9	N	D	K	7
XMC7G4	E	9	N	D	K	7
XPE7DU	E	9	N	D	K	7
XVJ6NK	E	9	N	D	K	7
YEETZ2	E	9	N	D	K	7
YEUCHD	E	9	N	D	K	7
YJ7ZJA	E	9	N	D	K	7
YLR6Q8	E	9	N	D	K	7
YNJ2F2	E	9	N	D	K	7
YXM4WR	E	9	N	D	K	7
Z3RJJK	E	9	N	D	K	7
Z8PVMX	E	9	N	D	K	7
ZAWBWP	E	9	N	D	K	7
ZC8TFU	E	9	N	D	K	7
ZF3U9V	E	9	N	D	K	7
ZJ6KNN	E	9	N	D	K	7
ZRUFGC	E	9	N	D	K	7
ZW8B32	E	9	N	D	K	7

Response Summary						Participants: 273
	Character 1	Character 2	Character 3	Character 4	Character 5	Character 6
Consensus	E	9	N	D	K	7
Number	267	270	270	269	272	272
Percent	97.8%	98.9%	98.9%	98.5%	99.6%	99.6%

Conclusions

TABLE 2

WebCode	Conclusions
24N7JV	The obliterated serial number on the piece of bar stock (Item 1) was magnetically processed and chemically restored to read "E9NDK7".
286E8V	Requested by CTS to recover serial number from submitted item. A magnet was used to determine whether the item was magnetic or non-magnetic. Item: magnetic Serial # was recovered successfully. SN: E 9 N D K 7 item was placed back into original packaging and secured in [Lab] Locker on 18 JUL 23 at 1215hrs.
29XCDG	no visible characters were recovered/ observed.
2DC6A2	Examinations showed the serial number of Item 1 to be obliterated. The serial number was restored using mechanical polishing and chemical etching techniques and was found to be "E9NDK7".
2GALMV	Examination of Item 1 revealed an obliterated area. Standard restoration techniques applied to the obliterated area revealed the following characters: "E9NDK7" Multiple factors could have had an effect on the interpretation of the restored characters.
2JHGM2	We proceed to reveal the serial number by polishing the surface then by prolonged applications of appropriate solutions.
2K9XHV	Examination of Item 1 revealed an obliterated area. Standard chemical restoration techniques were applied to Item 1 and revealed the following characters: "E9NDK7". Multiple factors could have had an effect on the interpretation of the restored characters.
2P3U8L	Serial number restoration techniques were applied to Item 1A (bar stock). The serial number was determined to be E9NDK7. The interpretation of the data and authorization of the results was performed by the undersigned forensic analyst. Other staff members may have performed laboratory activities concerning evidence associated with this report. For a complete listing of all staff members who performed laboratory activities in this case, please contact the laboratory via the telephone number above. [Number not provided]
2VU4GJ	Standard laboratory procedures for restoring serial numbers stamped in metal have been employed on the defaced area of the submitted steel bar stock. The serial number was determined to be "E9NDK7".
2WJE7R	Attempts to chemically restore the obliterated serial number of Laboratory Item 1 were successful. The restored serial number is E9NDK7.
32Y6CM	On 19 July 2023 a metallic item was received at [Laboratory] for examination. I was asked to restore any altered or erased characters from the item. The metallic item contained a groove where it appeared that some of the metal had been removed. Number restoration techniques were applied to this area and a line of characters was restored. The characters were " E 9 N D K 7 ".
33P9ZM	Bar stock (Item #1) was chemically and magnetically processed. it's SN was restored to read: E9NDK7.
3NNULB	As received the serial number on Item 01-01 was obliterated. Magnaflux, mechanical, and chemical processing were applied to Item 01-01 and the following characters were developed: E9NDK7.
3QEXBC	The obliterated serial number was fully restored to read E 9 N D K 7 using sand paper, Fry's reagent, and photography.
3RT6WT	CTS Item 1 piece of metal is consistent with being steel. Chemical treatment of the obliterated area revealed the following serial number: F9NDK7.
3UBJ2E	The obliterated serial number on the Item 1 was restored and found to be E9NDK7.
3UTD3P	The serial number was restored to read E9NDK7 using chemical etching techniques.
3W3K6H	The serial number of item 1 is E9NDK7.
44VA2C	Serial number was restored to read "E9NDK7".

TABLE 2

WebCode	Conclusions
4LWTH9	Visual examination and chemical treatment of the serial number area on the barstock, Item 1A, reveal the following number: E9NDK7 Item 1B was inspected to verify and document contents. No analysis was performed on the item listed.
4N3D9U	Item 1-1: Trace item - A piece of cold rolled steel bar stock with suspected obliterated serial number: Visual examination of this item revealed the presence of polish marks on the front of the metal bar. This area was magnetically processed and etched with acid solutions and the following was restored: E 9 N D K 7
4TFD6L	Serial number restoration techniques were applied to Item 1A (aluminum bar with center portion ground out). The partially restored serial number was determined to be *9NDK7. The asterisks represent unrestored characters.
624ECH	A portion of item 1 was obliterated with no visible serial number. Examination and chemical processing of the obliterated serial number on item 1 was restored and determined to be "E9NDK7".
62MGKH	The obliterated serial number on the steel bar stock in Item #1 was completely restored and found to be E 9 N D K 7.
62P3GY	The obliterated serial number on the steel bar stock, item 1, was restored to E9NDK7. The steel bar stock, item 1, was examined. The location of the suspected obliterated serial number, the middle of the bar stock, was obliterated by a grinding type of tool. Using standard restoration techniques, the obliterated area was sanded and treated with magnetic inspection particles and chemicals.
64Q9V6	The piece of steel bar stock, item 1, was observed to have been obliterated. Restoration techniques were used to restore this serial number to "E9NDK7"
664P9H	Serial number restoration was performed on item 1.1. The serial number E9NDK7 was restored.
68FCTH	[No Conclusions Reported.]
6HATFX	Item 1 was microscopically examined. The obliterated number on Item 1 was polished, magnetically processed, and chemically restored to reveal the serial number E9NDK7.
6KYAMK	The serial number on Item 1 was restored to read E 9 N D K 7 using magnetic particle inspection and chemical etching techniques.
6QQA88	Magnetic, physical, and chemical processing of the submitted steel bar restored the serial number to read: E9NDK7.
6TVXPH	The obliterated number has been restored by using the etch method with the acids after Fry and Wazau.
6WQT7W	We used a chemical process to reveal the erased serial number. This process turned out to be successful. The number thus obtained appears to be as follows: E9NDK7
72JB2M	The serial number on the item 1 block was restored to be E9NDK7. The item STANDARD was used as a font reference.
767U67	Examination of the submitted cold rolled steel bar stock found the manufacturer's serial number to have been obliterated. The obliterated, original serial number was restored to read "E9NDK7".
77WXU8	For the evidence received and identified internally in the Ballistics Unit as E1-23-4137, it can be seen that alteration was present in the area where the impression was found, which itself could be recovered through the restoration process. After applying the procedure, the sequence revealed was E9NDK7. It should be noted that the features revealed by this process are not permanently recovered and wear persists on the surface.
7C3P36	Visual examination and chemical treatment of the serial number area on the steel bar stock, Item 1A, reveal the following number: E 9 N D K 7. Item 1B was submitted as a reference standard for comparison to Item 1A. No analysis was performed on Item 1B.
7DTRR6	The piece of cold rolled steel bar had alteration in one area, the restoration process was applied in this area and the serie E9NDK7 was restored. The restored characteristics through this process are not permanently recovered and alteration persists in the piece of cold rolled steel bar.

TABLE 2

WebCode	Conclusions
7EUKRY	Visual examination with mechanical and chemical processing as well as magnetic particle inspection of the piece of metal (Item 1) revealed the obliterated serial number to read: E9NDK7.
7FLNFY	Examination of Item 1 revealed a piece of metal with an obliterated area. Standard restoration techniques were used and the following characters were restored "E9NDK7". This test was completed by Firearms and Toolmarks Examiner, [Name].
7H89JH	A serial number restoration was attempted on the item using chemical etching techniques. The serial number was restored to read E9NDK7.
7LPPE8	Fully restored to read E9NDK7.
7MNTCP	The examination and chemical processing of a piece of cold rolled steel bar stock restored the obliterated serial number which came out to be E9NDK7. The chemicals used were 25% Nitric Acid, Davis' Reagent, Turner's Reagent, and Fry's Reagent in that order.
7NGQHB	The serial number was restored using electrochemical etching and was found to be E9NDK7.
7PRL43	The serial number was restored to read: E 9 N D K 7
7QJHTW	Exhibit 1 was processed with serial number restoration techniques and the following number was developed in the obliterated section: "E9NDK7"
7U2N9J	Restoration techniques applied to the steel sample provided "item 1" revealed a serial number consistent with the following sequence: E9NDK7.
7UJTPW	Chemical restoration revealed the serial number to be E9NDK7.
7WRPCL	The serial number was restored to read E9NDK7.
82YV6X	Examination and chemical processing of Item 1 and restored obliterated serial number, which was determined to be "E9NDK7".
84LF9F	A serial number restoration was attempted using magnetic particle inspection and chemical etching techniques on the steel bar stock. The characters were observed as E9NDK7.
84NZ4W	The obliterated number on Item 1 was microscopically examined and chemically restored to reveal the serial number "E9NDK7".
87DDME	Using chemical etching techniques, the serial number was restored to read E 9 N D K 7.
8ACMY2	After a visual inspection, the area where the serial number had been removed was determined to be magnetic. The area was treated with Magnaflux prior to being subjected to hand sanding/polishing with varying grades of wet/dry sandpaper. The area was then treated with: Turner's Solution, Davis' Solution, Fry's Solution. Positive. The recovered serial number was: E9NDK7
8DDN2K	The obliterated serial number was completely restored and can be read as: E9NDK7
8F2698	It is observed that the piece of metal showed wear and/or alteration in the central part of one of its sides, from said area it was possible to recover an alphanumeric sequence through the development process. After applying the development process, the E9NDK7 sequence was revealed. It should be noted that the characteristics revealed by this process are not permanently recovered and wear persists on the surface. (*)
8FJD28	1. Examination of Exhibit 1 revealed a piece of metal with an obliterated area. Standard serial number restoration techniques were used and the following characters were observed: E 9 N D K 7.
8XZDAQ	The steel bar stock (Item 1) was submitted with an obliterated serial number and was restored to read E9NDK7.
8YT9XK	One (1) ferrous piece of bar stock. Dimensions of 2.5" x 1" x .25" (LxWxH). Serial number obliterated through cutting/abrasion. No characters visible as received. Magnetic particle inspection resulted in a full restoration of "E9NDK7". CTS number "23-5250C" scribed on reverse for identification.
99YHUC	Magnetic particle inspection was used on the obliterated area and six characters were recovered: E 9 N D K 7.

TABLE 2

WebCode	Conclusions
9F94GK	upon analysis, I am opinion the obliterated serial number on cold rolled steel was restored and intrepeted as 'E9NDK7'
9HY6NU	Results of Examinations: The examination and processing of the obliterated serial number on the Item 1 bar stock was restored to read "E9NDK7".
9LYDT6	Alphanumerics sequence "E9NDK7" was restored in the disturbe area of the object identified as 2023-4133.
9RT9WX	The serial number had been erased. It was restored and read as E9NDK7.
9UYQWE	The obliterated serial number on Item 1 was restored to read E9NDK7.
9WHRUL	On the examination, I found that there were filing mark on the steel bar stock and no alphanumerics were observed. Upon electrochemical treatment on the filed surface, a set of number read as "E9NDK7" was restored. Hence, I am of the opinion that, the original number of the steel bar stock were filed and was restored back and read as "E9NDK7".
9Y8YF4	the number restored in the cold rolled steel bar, was E9NDK7
9YNDGL	The development process was carried out in the area where it was altered and it was possible to restoration the alphanumeric sequence corresponding to E9NDK7
9ZYBWN	An obliterated area was observed on Item 1. Standard chemical restoration techniques were used on the obliterated area. The following characters were revealed: E9NDK7 Multiple factors could have had an effect on the interpretation of the restored characters.
A73JTJ	The serial number in the center of Item 1 was determined to be "E9NDK7".
A74A9E	The defaced serial number of Item 1 was magnetically and chemically processed to read: "E 9 N D K 7".
A9UKWL	Item #1 was received with a suspected obliterated serial number. Attempts to restore the serial number with polishing and chemical processing were done. The best observation of the obliterated serial number is E9NDK7.
AA3K4E	The weapon was physically and chemically processed. Its serial number was restored to read: E9NDK7. Item # 01 will be forwarded to the "Proficiency Test Long Term Storage."
ACTVTL	The obliterated serial number on the bar stock, item 1, was restored to read E9NDK7.
ACUL8G	The serial number on the metal bar stock (Exhibit 1) was mechanically and chemically treated and restored to read E9NDK7. No serial number restoration was performed on the metal bar stock standard (Exhibit 2).
AEWQEA	Item SNR1 consisted of an "aluminum standard" and a piece of metal with visible machining marks on one side. The machined area was examined with magnetic particle inspection. A serial number was restored to read E9NDK7.
AGKXZR	The serial number of Item 1 was recovered using magnetic particle inspection and was found to be: E9NDK7.
AKM2N8	Upon electrochemical treatment on the filed surface, the number E 9 N D K 7 was restored. Based on my findings, I am opinion that E 9 N D K 7 was the original number stamped on the surface that was previously obliterated.
AQAMZZ	The obliterated area on item 1 was physically and chemically restored to read: E 9 N D K 7 Additional items were received, but not analyzed.
AQAPP6	The obliterated serial number on center portion of barstock submitted in laboratory evidence item 1 was chemically restored with the following results obtained. The restored serial number is E 9 N D K 7.
AQP7KX	The serial number as erased. I was able to restore the serial number which read E9NDK7.

TABLE 2

WebCode	Conclusions
AXDNZU	Visual examination with chemical processing of the steel bar stock (Item 1) revealed the obliterated serial number to read: E9NDK7. Evidence examined for this report will be returned to the [Laboratory] Quality Assurance Coordinator.
AXPK8K	By etching, using the methods according to "Oberhofer, Fry" and the aluminium sheet enclosed as a reference, the serial number E9NDK7 could be restored.
B2N327	Area/Items Processed: Item #1 - A piece of cold rolled steel bar stock with suspected obliterated serial number - was processed for serial number restoration. After it was determined that the area was ferrous (magnetic), magnetic particle inspection (MPI) was used in an attempt to visualize the obliterated characters. In addition to MPI, the appropriate chemical etchants to include Davis, Turner, and Fry were utilized in an attempt to visualize the obliterated characters. Through examination and processing, the obliterated serial number was fully restored to be "E9NDK7".
B4VGQK	The Exhibit 1 obliterated serial number, located on the ground side, was restored to read "E9NDK7".
B6NEW7	After treating the erased area I was able to see the original characters as: E9NDK7.
B9MLKN	Examination Resulting From: Serial Number Restoration proficiency testing. Exam Start Date: 7/12/2023 Items of Evidence/Items Examined: From Proficiency Test No. SNR-1. Item 1: One piece of steel bar stock, labeled SNR-1, with suspected obliterated serial number. Serial number results: Serial number for item 1 is: E9NDK7 Results were verified by [Name], on 07-12-2023. Evidence disposition: Photographs retained in Forensic Division. CTS Item(s) – Retained in Forensic Division. This report contains the conclusions, opinions, and/or interpretations of the examiner(s) named within this report. End of Report for [Lab] Case # CTS 23-5250 *This report shall not be reproduced except in full without approval of the laboratory* [Signature of Technician].
BAK3DD	The serial number on the metal plate was restored to read E9NDK7 using chemical etching techniques.
BAMNAT	The metal bar from Item 1 was examined and appeared to have an area of obliteration. Attempts were made to restore this area using magnetic and chemical etching techniques. The area was restored and the serial number was determined to be: E 9 N D K 7
BDEWBE	I examined and chemically processed Item 1, and I determined the serial number to be E9NDK7.
BEEVUM	Visual examination of this item revealed the presence of grind/polish marks on the center of the steel bar. This area was magnetically processed and etched with acid solutions and the following was restored: E 9 N D K 7
BPEHLJ	Restoration of obliterated stamped marking was performed on the questioned surface of the Item 1, and the restored serial number was found to be "E 9 N D K 7"
BT9JJR	1. The identification of the steel bar was obliterated. 2. The recovered characters from the steel bar using Fry reagent is: EDN0K7, wich correspond and identifies the piece.
BWXNHQ	Visual examination with mechanical and chemical processing of the metal bar stock (Item 1) revealed the obliterated serial number to read: E9NDK7. Evidence examined for this report will be returned to the [Laboratory] Quality Assurance Coordinator.
C3VZRT	Visual examination and chemical treatment restored the obliterated serial number on Item 1 to read "E9NDK7."
C9HRXZ	it was observed that the piece of metal was altered and its serial was obliterated. Through the process restoration it was recovered the serial E9NDK7.
CB9UZ4	Examined the specimen marked #1. The obliterated serial number was magnetically processed and restored to read E9NDK7.
CFKWTQ	EVIDENCE SUBMITTED: Lab Item #: Agency Item #: Description: 1: SNR1: One (1) piece of cold rolled steel bar stock with obliterated serial number and one (1) aluminum standard. CONCLUSIONS OF ANALYSIS: The serial number on the piece of cold rolled steel bar stock, item 1, was restored to read "E9NDK7".

TABLE 2

WebCode	Conclusions
CH9D2D	The serial number on Item 1 was restored to read E9NDK7 using magnetic particle inspection and chemical etching techniques.
CH9FQH	The following serial number: E 9 2 D K 7 was recovered and read out as the result of examination of the item designated as Item 1.
CHA4F9	The restored serial number is E9NDK7
CHABBA	A combination of sanding, polishing and chemical etching were used to restore the serial number on item 1. The serial number was restored to: E9NDK7.
CJJBEV	I applied chemical etchants to the area of the obliterated serial number, resulting in the sequence: E9NDK7 being restored.
CKXHR	The serial number on this material consists of E9NDK7.
CNYJ3U	Serial Number Restoration Analysis: Methodology: Physical (Visual Examination) Microscopy (Comparison Microscope) Chemical (Reagent Etching) MPI (Magnetic Particle Inspection) Serial number restoration procedures revealed the serial number on Item 1, the metal bar stock, to be: E 9 N D K 7.
CPQK7X	The obliterated serial number was successfully restored to read E9NDK7
CQJHCJ	Items 1 (steel bar) and Item 2 (Aluminum standard) were photographed. The obliterated area of item 1 was sanded with 180 and 1500 grit sandpaper and treated with Turne's and Fry's chemical reagent, twice. After both treatments photographs were taken. After the last treatment the alpha-numeric combination was observed (E9NDK7). The alpha-numeric combination was photographed and viewed in Adobe.
CTQQK4	1. The obliterated area on the Exhibit 1 metal block was processed using standard serial number restoration techniques. The following characters were observed: E 9 N D K 7.
CUNYTM	Item 1 was examined and found to exhibit an obliterated area in the center of the bar stock. As the result of magnetic particle inspection and the application of chemical etchants, the following serial number was revealed: E9NDK7. The above analysis began on 08/09/2023.
D2JMKB	On 19 July 2023 a sample pack containing a metal block was received at [Laboratory]. I was requested to examine the block and to restore any erased serial numbers. Number restoration techniques were applied to an indented area on one side of the block. A single line of characters was revealed. The line of characters was "E 9 N D K 7" .
D44C6N	Using magnetic and chemical methods, the obliterated serial number located on the recessed portion of Item 001A was restored to read E9NDK7. Item 001B was used as a reference for number/letter structure
D82V62	[No Conclusions Reported.]
DA99TU	The serial number had been erased however I was able to restore it to read E9NDK7.
DFGEMF	The serial number was restored to read E9NDK7.
DQVQHP	The Item 1 serial number was restored to read as E9NDK7.
DZKH73	Exhibit 1 was examined and determined to be a piece of ferromagnetic bar stock with an obliteration displayed in its center. The obliteration was processed and the following characters were observed: E 9 N D K 7
E2UKR2	1. Exhibit 1 consists of one piece of ferromagnetic metal with an obliterated area in its center. 2. Standard restoration techniques were used, and the following characters were observed in the obliterated area: E 9 N D K 7.
EBYWH4	A request has been made to determine whether or not a suspected obliterated serial marking could be recovered. The serial marking appears to have been removed from one side of the metal block. After using the electromagnetic and chemical process, the serial marking has been identified as E9NDK7.

TABLE 2

WebCode	Conclusions
ED6CXL	Using magnetic and chemical laboratory restoration techniques, the obliterated serial number on Item 1 was restored to read E9NDK7.
EDQXL7	The obliterated number on item #1001 was polished and chemically restored to reveal the serial number E9NDK7.
EFX9LF	Examination and restoration of the obliterated area on Item 1 (a ferrous metal piece of bar stock with an obliterated area) revealed the following characters interpreted as "E9NDK7".
EJWL6Y	Examination of Item 1 found an obliterated serial number on the bar stock. Standard restoration techniques were applied to Item 1 and the following characters were restored: E9NDK7. Multiple factors could have had an effect on the interpretation of the restored characters..
EJXGQQ	The obliterated serial number on Item 01-01 was restored to read E9NDK7.
EN7PAF	Upon electrochemical treatment on the filed surface, the number E9NDK7 was restored. Based on my findings, I am of the opinion that E9NDK7 was the original number stamped on the surface that was subsequently obliterated.
EPJG3W	The piece of cold rolled steel bar stock is applied the procedure "Revelado de secuencias alfanuméricas u otras impresiones en armas de fuego o similares, version 12" and the alphanumeric sequence is obtained E9NDK7.
EUWWUA	Item 1 A serial number restoration was attempted using magnetic particle inspection and chemical etching techniques. The serial number was restored to read E9NDK7.
F8X9KT	The serial number was restored to read E9NDK7.
FCR3KF	The obliterated serial number located on the Exhibit 1 bar stock was processed. The characters were concluded to be E9NDK7. The aluminum standard submitted with Exhibit 1 was not examined.
FEJ2YD	The hypothesis that the serial number is E 9 N D K 7 is very strongly supported
FGK4LU	The serial number of item 1 was examined using magnetic particle inspection, followed by chemical processing, and determined to be E9NDK7.
FMUAFE	On analysis, I found the number on the steel bar was tempered. On electrochemical treatment, I found number E9NDK7. Therefore, I am of the opinion that the number on the steel bar was tempered and the original number was E9NDK7.
G28VLQ	1) Serial No. Restored as E9NDK7
GPUVPW	The defaced serial number on the silver-colored bar was restored and appears to read E9NDK7.
GRJ98E	The original number was grinded and have been restored, read as E9NDK7.
GRKWW7	2023-5250: SNR1: Items – Description/Visual Examination. Item 1: A piece of cold rolled steel bar stock with suspected obliterated serial number. Examination Results: Using chemical & physical serial number restoration techniques, an attempt was made to restore the obliterated serial number with the following results: Serial number: E 9 N D K 7 was restored on Item 1 [Name] Firearm and Toolmark Examiner
GUNWM6	All items were visually examined. Attempts to restore the obliterated area of Q1 were made using polishing, magnetic, and chemical means of restoration. These attempts partially restored the number: E9N?K7.
HABPTN	The serial number on the Item 1 defaced metal block was restored to read "E9NDK7".
HC3LGH	The serial number is ground off. The serial number E9NDK7 was restored by acid etching. Polishing, Magnuflux, and the Fry's reagent were used for the restoration. The magnetic particles provided some outline of the serial number; however, polishing and acid etching were still necessary. A chemical reaction was observed when the acid etching solution was applied to the surface area of the firearm. This item will be held in the Firearm Section's Evidence Room.

TABLE 2

WebCode	Conclusions
HDWJM3	On July 31, 2023 a serial number restoration was conducted on the Item 001. Item 001 was determined to be a cold rolled steel block/ ferrous metal with an unknown toolmark obliterating the serial number. Using standard restorative techniques, the visualized restored serial number was determined to be E9NDK7. See serial number worksheet for further. Digital images were obtained.
HFKQAK	The Serial Number is E9NDK7
HKDU24	The visual analysis and restoration of the serial number for the Steel Bar K1 was initiated on July 7th, 2023. Attempts to restore the obliterated serial number using magnetic, polishing, and chemical etching methods were successful and read: E9NDK7.
HLPR9U	The alphanumeric sequence revealed in the piece of metal is consistent with the characteristics observed in the comparative material attached for this test.
HM6QPX	The alphanumeric sequence of the piece of metal was determined to be obliterated. After the analysis, the sequence concordant with the characteristics evaluated in the comparative material was completely revealed. The alteration detected may still be perceptible after the analyzes carried out.
HQKHE7	The analysis of the above listed evidence was initiated on 8/21/2023. The steel bar stock was visually analyzed. Upon polishing, magnetic and chemical etching methods, the serial number was restored to read: E9NDK7
HQNZKG	The serial number is milled off. The serial number (E9NDK7) was restored by acid etching. Polishing, Modified Fry's and Nitric Acid reagents were used for the restoration. A chemical reaction was used observed when the acid etching solution was applied to the surface. Disposition: This item will be held in the Firearm Section's Evidence Room.
J6X4L3	Item 1 is a piece of cold rolled steel bar stock bearing an obliterated area which was restored to read E9NDK7. The serial number in Item 1 was restored using MagnaFlux and chemical etchants.
J8NEBA	Attempts to physically and chemically restore the obliterated serial number of Laboratory Item 1 were successful. The restored serial number is E9NDK7.
J8P6P6	Q-1 IS ONE SILVER METAL OBJECT (MO-1), CONSISTENT WITH FERROUS METAL BAR STOCK. THE SERIAL NUMBER WAS OBLITERATED BY AN UNKNOWN METHOD; HOWEVER, MO-1 DISPLAYS DEEP MILLING MARKS ON THE OBLITERATED AREA. THE SERIAL NUMBER WAS RESTORED USING A COMBINATION OF POLISHING, CHEMICAL ETCHING TECHNIQUES, AND THE USE OF MAGNETIC PARTICLE INSPECTION (MAGNAFLUX). SERIAL NUMBER OF "E9NDK7" SUCCESSFULLY RECOVERED. MO-1 MARKED WITH CASE NUMBER "23-5250A" FOR IDENTIFICATION.
JB4MYA	After an attempt to chemically restore the erased serial number on the item submitted, the following serial number was recovered E9NDK7.
JCFKA6	As a result of an acid restoration process, I identified the obliterated alpha numeric characters to be "E9NDK7".
JGC4FA	The serial number on the Item 1 plate was restored to read E9NDK7 using magnetic particle inspection. The Item 1 aluminum standard was used for reference purposes.
JKTNZ6	Serial number restoration techniques were applied to Item 1 (1x2.5-inch section of metal with an obliterated serial number on one side.). The serial number was determined to be E9NDK7.
JMF84N	I conducted a serial number restoration technique on 2023CTS Forensic Training Program Test No 23-5250 sample pack SNR1. As a result, I obtained a full recovery of previously stamped alpha-numeric characters of E9NDK7 which compared favourably with test impressions provided on the Aluminium Standard.
JN96A9	A physical (Fry's Reagent) serial number procedure was conducted on the above described evidence (item #1) on 07/11/23 with the following results: The defaced serial number on item #1 was restored to read: E9NDK7.

TABLE 2

WebCode	Conclusions
JT8EMW	1. Examination of Exhibit 1 revealed one (1) ferromagnetic piece of metal bar with an obliterated area measuring 64.47mm in length, 25.37mm in width, and 6.31mm thick. 2. Serial number restoration was performed on the obliterated area of Exhibit 1 and the following characters were observed: E 9 N D K 7
JZRBR7	Serial number restoration techniques were applied to Item 1 (metal bar). The serial number was determined to be E9NDK7.
KFCKPT	Item 1 was examined and determined to be a ferromagnetic metal block, silver in color, approximately ~6.2 cm in length, ~2.5 cm in width and ~6 mm in thickness. On one side there is a centrally located area where material has been removed ~3.8 cm in length. This suspected area of obliteration has material removed and presents a smooth surface with a granular texture. Due to smooth surface texture polishing was not performed with positive results. The obliterated area on the Item 1 metal block was processed using standard serial number restoration techniques. The following characters were observed: E9NDK7.
KL2ZFK	I restored the erased serial. It read E9NDK7.
KL3XQG	Using magnetic and chemical standard laboratory restoration techniques, the obliterated serial number on item 1 was restored to read E9NDK7.
KQU684	Number restoration techniques revealed a line of characters within the recessed portion of the piece of metal. These characters were "E 9 N D K 7".
KQU8T3	The defaced serial number on the piece of cold rolled steel bar stock (Item 1) was successfully restored to read "E9NDK7".
KQVZTV	1. Examination of Exhibit 1 revealed one piece of ferromagnetic steel bar stock measuring 65.17 mm long, 25.33mm wide, and 6.31mm thick. a. There is an obliterated area in the approximate center of the steel bar stock. b. The following characters were observed on the obliterated area of the Exhibit 1 steel bar stock: E 9 N D K 7. c. All measurements are approximates. TECHNICAL NOTES: Serial number restoration is dependent upon multiple factors to include the original stamping/engraving method, material type, obliteration method, and depth of material removed. The reported characters convey only the appearance of characters or partial characters that the examiner observed after the application of standard serial number restoration techniques. These characters are not considered absolute to the exclusion of other possible characters with similar shape or form. The point of contact for this report is [Name, Phone, and Email].
KRM3GW	Serial number magnetically and chemically restored to read E9NDK7.
KT3CE4	One (1) steel bar stock submitted in a small tan envelope labeled "Test No. 23-5250B (Item#1). Serial number defaced by abrasion & smooth polishing. CTS#23-5250B was etched on underside, by examiner, for identification purposes. Serial number restored using chemical restoration techniques and magnetic particle inspection which resulted in a full restoration "E9NDK7.
KUD4KY	Item #1/Test #23-5250 was received in the lab with an obliterated serial number. Attempts to raise the serial number of Item #1/Test #23-5250 via chemical methods yielded the following results: The serial number of item #1 was determined to be E9NDK7.
KYRUQU	The obliterated serial number (Item 1) was restored on the steel bar stock and the following was recovered: E9NDK7.
L6XQCE	Date Worked: 08/09/2023 The serial number is milled off. The serial number (E9NDK7) was restored by acid etching. Polishing and the Modified Fry's reagent were used for the restoration. A chemical reaction was observed when the acid etching solution was applied to the surface area of the firearm. This item will be stored in the Firearm Section's Evidence Room.
LLGJZH	The obliterated serial number on the item A1-1 was restored and found to be E-9-N-D-K-7.
M3WEMP	The steel bar stock identified as Item 1 has an obliterated area, the restoration process was applied in this area and the alphanumeric sequence E9NDK7 was recovered.

TABLE 2

WebCode	Conclusions
MM869Z	Items – Description/Visual Examination Item 1: One (1) piece of cold rolled steel bar stock with a suspected obliterated serial number. Examination Results Using chemical and physical serial number restoration techniques, an attempt was made to restore the obliterated serial number with the following results: Serial Number: E 9 N D K 7 was restored on Item 1.
MREXTX	1- Item 1 is metal piece with the following dimensions: length = 65.0 mm, width = 25.5 mm and height = 6.5 mm. Visual examination of the evidence shows the existence of a scratch one side of part, caused by milling. The size of scratched zone is approximately: Length= 38.2 mm, width= 25.5 mm, and depth = 0.4 mm. 2- The chemical restoration of the characters that had been altered by milling was positive and the result is: E 9 N D K 7.
MUNMH2	The serial number on the metal plate was restored to read E9NDK7 using chemical etching techniques.
MVJGY7	I found filing marks on the steel bar 'Item 1'. Upon electrochemical treatment on the filed surface, the number 'E9NDK7' was restored. Therefore, I am of the opinion that the obliterated serial number is 'E9NDK7'.
N4QM9E	I restored the serial number on Item 1 to read E9NDK7.
N8LEEP	for the CTS two methods were performed. initially the temporary restoration was done using the magnaflux solution and later on destructive method was used (fry reagent)
NEAUAN	Magnetic particle inspection revealed the Item 1 serial number to be E9NDK7.
NF4HU6	Item 1-1-1-1 steel bar stock was received with an area of obliteration toolmarks. Using standard serial number restoration chemical techniques, the obliterated serial number on item 1-1-1-1 was restored to read: B9NDK7.
NGB3CD	The serial number was revealed in accordance with the methodology at the [Laboratory]. After a polishing of the metal surface, a combination of two acid reagents were used until the restoration of the number.
NHRY2R	Magnetic block when prepared and treated reveal serial number successfully restored and determined to be E9NDK7.
NKGHQW	The obliterated serial number on Item 1 cold rolled steel bar stock was restored and interpreted as E9NDK7
NM6WBZ	As a result for both the electromagnetic process and acid restoration process, I identified the obliterated the numerical and alpha numerical characters to be 'E9NDK7'.
NNWZZZ	Attempts to restore the obliterated serial number of Item 1 were successful. The restored serial number is E9NDK7.
NQM244	The serial number was restored to read E9NDK7.
NTTEV3	The serial number on the piece of metal (Exhibit 01) was mechanically and chemically treated and restored to read E9NDK7. No analysis was performed on the piece of metal (Exhibit 02).
NTTHK8	The obliterated serial number located on the Exhibit 1 piece of bar stock was processed. The characters were concluded to be "E9NDK7".
NWP4AP	Examination of the submitted steel bar stock found the manufacturer's serial number to have been obliterated. The obliterated, original serial number was restored to read "E9NDK7".
NYJRV7	Chemical restoration was performed on the sample. Start time: 14:30 Finish time: 15:00 The examination shows that a serial number has been obliterated. The serial number is very likely to be: E9NDK7
P3D7VZ	Serial number restoration techniques were applied to Item #1 (metal block). The serial number was determined to be E9NDK7.
PAVEGC	Using standard laboratory physical and chemical restoration techniques, the obliterated serial number on Item 1 was restored to read E9NDK7.

TABLE 2

WebCode	Conclusions
PB4QYD	Examinations showed the serial number of Item 1 to be obliterated. The serial number was restored using mechanical polishing and chemical etching techniques and was found to be: E9NDK7.
PELXEZ	Defaced Bar Stock (item 1) was magnetically and chemically processed. Its serial number was restorated to read: E9NDK7.
PVCTWH	Examination of the steel bar (Exhibit SNR1) indicated that one surface was machine ground. The ground metal surface was subjected to a restoration technique and the characters E9NDK7 were recovered. I am of the opinion that the characters E9NDK7 had been originally stamped onto the surface of the steel bar.
PWKDC6	The obliterated serial number of Item 1 was restored using mechanical polishing, Magnetic Particle Inspection (MPI) and chemical etching techniques and was found to be: E9NDK7.
PXK4RZ	The serial number on the piece of metal (Exhibit 1) was mechanically and chemically treated and restored to read E9NDK7. No analysis was performed on the piece of metal (Exhibit 2).
PZ8MUJ	Item 1 was physically and chemically processed in an attempt to recover the serial number. The serial number was recovered as E9NDK7.
PZLA77	After processing the Steel Bar, The following alphabetical and numerical formation was E9NDK7.
Q2W932	An apparent number had been removed from the item 1 steel plate. An attempt was made to restore the number. The following number was restored: E9NDK7. The item 1-1 aluminum plate was only used as reference information.
QV83YY	Defaced steel bar stock (1) was magnetically and chemically processed. It's serial number was restored to read: E9NDK7
QVAL7A	Using standard laboratory physical and chemical restoration techniques, the obliterated serial number on Item 1 was restored to read E9NDK7.
QWG2E2	We succeed to restore the serial number as: E 9 N D K 7
QWYYNT	Specimen #1 was received in the laboratory with an obliterated serial number. Attempts to retrieve the serial number via chemical methods yielded the following serial number: E9NDK7.
R33DR9	Using standard laboratory physical and chemical restoration techniques, the obliterated serial number on Exhibit 1 was restored to read: E9NDK7.
R6UAF3	Magnetic and chemical etching restoration techniques were used to restore the serial number. The number was restored and found to be: E9NDK7.
R9UM28	Item # 1: The serial number is milled off. The serial number (E9NDK7) was restored by acid etching. The Modified Fry's reagent and the Nickels & Alloy's Reagent were used for the restoration. Evidence Photographs: This submission is a digital media card containing 2 photographs, documenting the defaced serial number of the Item # 1. The Test submission will be forwarded to the Firearm's Evidence Room. The digital media card was placed in the Main Evidence Room.
RAMK8T	The obliterated number on Item 01 was polished and chemically restored to reveal the serial number E9NDK7.
RCAVP7	Serial Number Results Examination and magnetic and chemical processing of the Item 1-1 steel bar stock restored the original obliterated serial number which was determined to be 'E9NDK7'. Other Results The Item 1 packaging contained both Items 1-1 and 1-2. The Item 1-2 aluminum standard bar stock was used during the evaluation of the Item 1-1 steel bar stock restored serial number. Methodology The following methodologies were used in the examination of this case: Visual Examination Physical Examination Microscopic Examination Physical Processing Magnetic Processing Chemical Processing
RD3TVR	The obliterated serial number of item SNR1 was restored to read E9NDK7.
RDK2JM	The obliterated serial number on Item #1 was recovered utilizing magnetic particle inspection. The recovered serial number is E9NDK7

TABLE 2

WebCode	Conclusions
RDMKQX	The serial number on the piece of metal (Exhibit 01) was mechanically and chemically treated and restored to read E9NDK7. No analysis was performed on the piece of metal (Exhibit 02).
RFA4UG	The serial number was restored to read "E9NDK7".
RHYHCY	The serial number on the metal bar was restored to read E9NDK7 using magnetic particle inspection and chemical etching techniques.
RWH3WT	The obliterated characters on the steel bar stock were revealed to be E9NDK7.
T2N77R	The serial number of Item 001 as restored is E9NDK7.
T6MP4J	Examination of the submitted bar stock found the manufacturer's serial number to have been obliterated. The obliterated, original serial number was restored to read "E9NDK7".
T72RCD	Forensic serial number restoration methods applied to the area restored a full series of previously applied characters. Based on the restoration, characters, and fonts on the aluminum standard, the series of restored characters read: E9NDK7. (Table 3: Sample Preparation - Method 1, version 1.3. Prep and polish surface.)
T8UPHY	The serial number was restored to read E9NDK7.
TBUZFK	The metallic plate identified internally in the Ballistics Unit as 2023-4134 (Item 1), presents an alteration on one of its sides, through the development process it is possible to obtain the following alphanumeric sequence: "E9NDK7".
TC8K9U	Using a chemical restoration method, the obliterated serial number on the bar stock (item 1) was restored to read E 9 N D K 7.
TQMRYZ	Examination and chemical processing of Item 1 restored the original obliterated serial number which was determined to be E9NDK7.
TRXPCG	The following characters were recovered: E9NDK7
TTQMH3	Based on the above examination and finding, I am of the opinion that the original serial number on a piece of cold rolled steel bar stock labelled with 'Item 1' is E9NDK7.
TUREXX	The serial number on the ferrous piece of metal (Exhibit 1) was mechanically and chemically treated and restored to read E9NDK7.
TVFU6K	The piece of metal identified internally in the Ballistics Unit as E1-23-4140 (Item 1), showed wear and/or alteration on one of its sides, so the development process is carried out on the area worn, obtaining the alphanumeric sequence: "E9NDK7".
TXPVAR	The obliterated serial number on Item 1 was restored to read E9NDK7.
U6HMQV	Standard laboratory procedures for restoring serial numbers stamped in metal have been employed on the center of this metal bar. The serial number was determined to be "E9NDK7".
U7BFQA	Item 001 was chemically processed and restored to read "E9NDK7".
UJHB4K	Utilizing Davis', Turner's, and Frye's reagents, the obliterated serial number on the steel bar was fully restored to read "E9NDK7".
UJMNQG	serial number recovered with positive results
UL9C8M	[No Conclusions Reported.]
UMJAK6	The area of the serial number was observed to be obliterated by grinding. Using standard chemical restoration techniques, an attempt to restore the serial number was made. The serial number was restored and was determined to E9NDK7.
V3THXD	The serial number on the steel bar was restored to read: E 9 N D K 7
V6HWGV	A serial number restoration was attempted on Item 1 using magnetic particle inspection and chemical etching techniques. The serial number was partially restored to read ? ? N D K 7. The first character could either be a "F" or an "E". The second character appears to be a "9".

TABLE 2

WebCode	Conclusions
V6JJ2F	Visual examination and chemical treatment of the serial number area on the bar stock, Item 1A, reveal the following number: E 9 N D K 7.
V89XKY	Attempts to chemically restore the obliterated serial number of the segment of steel bar stock, Laboratory Item 1, were successful. The restored serial number is E9NDK7.
VCH7V2	After one application of 25% Nitric Acid, all six characters are visible and verifiable. The characters are 'E9NDK7'
VDBYQK	1. Exhibit 1 consists of one metal bar with an obliterated area. The obliterated area contains toolmarks consistent with abrasive machining and are not suitable for comparison. 2. The obliterated area of Exhibit 1 was restored using standard restoration techniques and the following characters were observed: E 9 N D K 7.
VZ7YVU	The serial number on the piece of metal (Exhibit 1) was mechanically and chemically treated and restored to read E9NDK7. No analysis was performed on the piece of metal (Exhibit 2).
WAQPUR	Serial number restoration techniques were applied to Item 1A. The serial number was determined to be E9NDK7. The interpretation of the data and authorization of the results was performed by the undersigned forensic analyst. Other staff members may have performed laboratory activities concerning evidence associated with this report. For a complete listing of all staff members who performed laboratory activities in this case, please contact the laboratory via the telephone number above. [Number not provided]
WCD9XB	After treating the area in question, Serial Number: E9NDK7 was recovered on machined steel plate.
WH4J89	The serial number on the cold rolled steel bar stock (item 01-01) was restored to read E9NDK7.
WK4YCP	Serial number restoration was performed on item 1. The serial number E9NDK7 was restored on item 1.
WK7GH2	Item 1 - A piece of cold rolled steel with suspected obliterated serial number Analysis Result: The serial number E9NDK7 was restored on the piece of steel. This should be considered the complete serial number
WMV2J	Examined the specimen marked #1. The obliterated serial number was chemically and magnetically processed and restored to read E9NDK7.
WMXD8V	The above serial # was fully recovered through MPI and the chemical etching process.
WPLW6M	The steel bar, item #1, was received in the laboratory with an obliterated serial number. Attempts to raise the serial number via chemical methods yielded the following serial number: E9NDK7.
WPPEBX	Examination and restoration of the obliterated area on Item 1 (a piece of cold rolled steel bar stock with suspected obliterated serial number) revealed the following characters interpreted as "E9NDK7".
WRT86W	The restored serial number could not be totally recovered: character number four could also be a "D".
X42A4Y	Item 1 was found to have an obliterated serial number on the front side. Standard restoration techniques applied to Item 1 restored the following characters: E9NDK7. Multiple factors could have had an effect on the interpretation of the restored characters.
X6U8AK	The erased number consisted of 6 characters, all of which I was able to restore. The obliterated serial number on the piece of metal was restored to read: E9NDK7.
X8ZNQP	The obliterated serial number on the face of the ferrous bar, item 23-5250 C, was restored to E9NDK7.
XA6DRC	The serial number on the submitted metal block, item 1, was completely obliterated. Magnetic enhancement techniques were utilized to visualize the serial number as follows: E9NDK7.
XAN8NF	The serial number of the piece metal identified item 1 is E9NDK7.
XDMHJF	the restoration procedure was applied to the barstock and the alphanumeric sequence E9NDK7 was obtained

TABLE 2

WebCode	Conclusions
XFRBCT	Examination of Item 1 revealed the presence of a defaced area. Item 1 was physically, chemically, and magnetically processed. The serial number was restored as: E9NDK7
XGJ7ZM	Examination and restoration of the obliterated area on the steel bar stock of Item 1 revealed the following characters: "E9NDK7".
XKL3R4	Using physical and chemical standard laboratory procedures, the obliterated serial number on Item 1 was restored to read "E9NDK7".
XMC7G4	Using chemical methods, the obliterated serial number located at the center of Item 001A was restored to read - E 9 N D K 7. Item 001B was for reference only and not further examined.
XPE7DU	Item 1 was visually examined and processed using polishing and chemical restoration methods. The serial number was restored to read E9NDK7.
XVJ6NK	On examination, I found no number on the cold rolled steel bar stock. However, I observed the surface of cold rolled steel bar stock was filed. After electrochemical treatment, the obliterated serial number was restored and read as "E9NDK7".
YEETZ2	Acid etching chemicals restored the serial number and it is E9NDK7
YEUCHD	Examination of the submitted bar stock found the manufacturer's serial number to have been obliterated. The obliterated, original serial number was restored to read "E9NDK7".
YJ7ZJA	The serial number was restored to read E9NDK7, by following method 55 v3.0.
YLR6Q8	Serial Number Restoration Analysis: Methodology: Physical (Visual Examination) Microscopy (Stereo/Comparison Microscope) MPI- Magnetic Particle Inspection Serial number restoration procedures revealed the serial number on Item 1, the barstock, to be: E 9 N D K 7
YNJ2F2	Item 1: The serial number is ground off. The serial number (E9NDK7) was restored by acid etching. Polishing, Fry's reagent and nitric acid were used for the restoration. A chemical reaction was observed when the acid etching solution was applied to the surface area of the steel bar. Disposition: Item 1 will be forwarded to the Property Custody Division.
YXM4WR	A serial number restoration was attempted using magnetic particle inspection and chemical etching techniques on Item 1. The characters were observed as E9NDK7.
Z3RJJK	Using a combination of mechanical and chemical restoration techniques, the obliterated serial number on the steel bar stock (Item 1) was restored to read: E 9 N D K 7. Item STD was used for its character exemplars and not examined beyond photography.
Z8PVMX	Serial number successfully restored.
ZAWBWP	Serial number restoration techniques were applied to Item #1. The serial number was determined to be E9NDK7.
ZC8TFU	The serial number on the Item 1 piece of steel bar stock was restored and determined to be the following: E 9 N D K 7.
ZF3U9V	I found filing marks on the metal plate 'Item 1'. Upon electrochemical treatment on filed surface, the number 'E9NDK7' was restored. Therefore, I am of the opinion that the obliterated serial number is 'E9NDK7'.
ZJ6KNN	The bar stock (Item 1) was chemically processed. Its serial number was restored to read: E9NDK7.
ZRUFGC	It was determined that the piece of metal presents alteration due to wear on the surface. By chemical restoration, an alphanumeric series was revealed consistent with the comparison material provided for study.
ZW8B32	The obliterated serial number on Item 1 was restored to read E9NDK7 by using the MagnaFlux and chemical etching processes.

Sample Preparation

(listed in order of use)

TABLE 3

Sample Preparation			
WebCode	Method	Tool Used	Grit Size
24N7JV	Polishing	Steel wool	
286E8V	Sanding	Sand paper	Fine
29XCDG	Polishing	Dremel	
2DC6A2	Polishing	Rotary Tool	flap wheel, 120 grit
2GALMV	Polishing	Dremel	
2JHGM2	Polishing	Rotary Tool	320 & 600 & 1200 & 4000
2K9XHV	Polishing	Dremel	
2P3U8L	None		
2VU4GJ	Polishing	Dremel	
2WJE7R	Visual	Stereoscope	
	Visual	Microscope	
32Y6CM	Polishing	Sand paper	P1200
33P9ZM	Visual	Stereomicroscope (Zeiss Discovery V20)	
3NNULB	Polishing	Dremel	
3QEXBC	Sanding	Sand paper	80, 400, 1500
3RT6WT	Sanding	Dremel	80 grit
	Polishing	Dremel	
	Polishing	Steel wool	
3UBJ2E	Sanding	Dremel	180 and 240
	Polishing	Dremel	
3UTD3P	Polishing	Sand paper	220
3W3K6H	None		
44VA2C	Polishing	Dremel	
4LWTH9	Visual	Stereoscope	
	Sanding	Sand paper	P800
	Polishing	Dremel	
4N3D9U	Visual	Stereoscope	

TABLE 3

Sample Preparation			
WebCode	Method	Tool Used	Grit Size
4TFD6L	Visual		
	Polishing	Dremel	
624ECH	Polishing	Dremel	
62MGKH	None		
62P3GY	Sanding	Sand paper	400
64Q9V6	None		
664P9H	None		
68FCTH	Sanding	Rotary Tool	
6HATFX	Visual	Microscope	
	Polishing	Rotary Tool	
6KYAMK	Visual	Visually looked at the item 1 obliterated area	
	Visual	Stereoscope	
	Visual	Camera-photographic preparation of Item 1 obliterated area	
6QQA88	Visual	Stereoscope	
	Polishing	Stereoscope	
6TVXPH	None		
6WQT7W	Sanding	Rotary Tool	160 then 500
	Cleaning	Acetone	
72JB2M	None		
767U67	None		
77WXU8	Sanding	Sand paper	220, 400, 1000
7C3P36	Sanding	Dremel	
	Sanding	Sand paper	100-C, later used A215
	Polishing	Dremel	
7DTRR6	Sanding	Sand paper	400, 220, 80
7EUKRY	Sanding	Sand paper	600 grit
7FLNFY	Visual	Stereoscope	
7H89JH	Visual	Microscope	
	Sanding	Sand paper	220

TABLE 3

Sample Preparation			
<u>WebCode</u>	<u>Method</u>	<u>Tool Used</u>	<u>Grit Size</u>
7LPPE8	None		
7MNTCP	Sanding	Sand paper	150
7NGQHB	Cleaning	Acetone	
7PRL43	Visual	Stereoscope	
7QJHTW	None		
7U2N9J	Polishing	Steel wool	
	Cleaning	Ethanol	
7UJTPW	Visual		
7WRPCL	Polishing	Dremel	
82YV6X	Visual	Stereoscope	
84LF9F	Visual	Microscope	
84NZ4W	Visual	Stereoscope	
87DDME	Polishing	Steel wool	
8ACMY2	Visual		
	Sanding	Sand paper	100
8DDN2K	Visual	Stereoscope	
8F2698	Sanding	Sand paper	220, 400 and 1000
	Cleaning	Acetone	
8FJD28	None		
8XZDAQ	Cleaning	Acetone	
8YT9XK	Visual	Stereoscope	
99YHUC	Visual		
9F94GK	Cleaning	Acetone	
9HY6NU	Sanding	Sand paper	400
	Polishing	Semichrome	
9LYDT6	Sanding	Sand paper	1000
9RT9WX	Visual	Microscope	
	Sanding	Emery paper	800
	Polishing	Emery paper	1200

TABLE 3

Sample Preparation			
<u>WebCode</u>	<u>Method</u>	<u>Tool Used</u>	<u>Grit Size</u>
9UYQWE	Visual	Stereoscope	
9WHRUL	Visual	Acetone	
9Y8YF4	Sanding	Sand paper	400
9YNDGL	Sanding	Sand paper	220
9ZYBWN	Visual	Stereoscope	
A73JTJ	None		
A74A9E	None		
A9UKWL	Polishing	Dremel	
AA3K4E	Polishing	Dremel	
ACTVTL	Sanding	Dremel	unk
ACUL8G	Visual	Microscope	
AEWQEA	None		
AGKXZR	Cleaning	Ethanol	
AKM2N8	Visual	Stereoscope	
	Cleaning	Acetone	
AQAMZZ	Visual	Stereoscope	
	Polishing	Rotary Tool	Cratex extra-fine abrasive wheel
AQAPP6	None		
AQP7KX	Visual	Microscope	
	Polishing	Rubber Wheel	
	Cleaning	Emery paper	400 & 800
	Cleaning	Acetone	
AXDNZU	None		
AXPK8K	Visual	Stereoscope	
	Visual	Microscope	
	Sanding	Sand paper	400
	Sanding	Emery paper	1000
	Cleaning	Ethanol	
B2N327	None		
B4VGQK	Polishing	Dremel	

TABLE 3

Sample Preparation			
WebCode	Method	Tool Used	Grit Size
B6NEW7	Sanding	Sand paper	180 to 2500, progressive, by hand. (180 ,240, 1200 up to 2500 final)
B9MLKN	Visual	Stereoscope	
	Polishing	Dremel	
BAK3DD	Visual	Stereoscope	
BAMNAT	None		
BDEWBE	Polishing	Dremel	
BEEVUM	Visual		
	Visual	Stereoscope	
BPEHLJ	Sanding	Sand paper	120, 360, 800, 1500
BT9JJR	Sanding	Sand paper	120
BWXNHQ	Sanding	Sand paper	250, 400, 600
	Polishing	Dremel	Fine, XFine rubber polishing wheel, cotton wheel with red compound
C3VZRT	Visual	Stereoscope	
C9HRXZ	Sanding	Sand paper	220 AND 400
	Cleaning	Acetone	
CB9UZ4	Cleaning	Acetone	
	Sanding	Sand paper	600 Grit, 1000 Grit
	Polishing	Rotary Tool	Polishing wheel
CFKWTQ	None		
CH9D2D	Visual		
CH9FQH	None	Microscope	
CHA4F9	Visual	Stereoscope	
	Polishing	Dremel	120
CHABBA	Sanding	Sand paper	120,220,320
CJJBEV	Polishing	Emery paper	400, 800 & 1200
	Polishing	Rotary Tool	Textile wheel for final polish
	Visual	Stereoscope	
CKXHXR	None	Acetone	

TABLE 3

Sample Preparation			
WebCode	Method	Tool Used	Grit Size
CNYJ3U	Visual	Microscope	
CPQK7X	Polishing	Dremel	
CQJHCJ	Sanding	Sand paper	180 and 1500
CTQQK4	Polishing	Dremel	
CUNYTM	None		
D2JMKB	Polishing	Sand paper	400, 600, 1200
D44C6N	Polishing	Dremel	
D82V62	None		
DA99TU	None		
DFGEMF	Polishing	Dremel	
DQVQHP	Visual	Self	
	Polishing	Dremel	
DZKH73	Visual	Stereoscope	
E2UKR2	Sanding	Sand paper	400
EBYWH4	Visual	Microscope	
	Sanding	Sand paper	60
	Sanding	Emery paper	600
	Sanding	Emery paper	1000
	Polishing	Rotary Tool	
ED6CXL	Visual		
EDQXL7	Polishing	Dremel	
EFX9LF	Visual	Stereoscope	
	Polishing	Dremel	Polishing bit on Dremel
EJWL6Y	Visual	Stereoscope	
	Polishing	Dremel	Fine wheel
EJXGQQ	Polishing	Dremel	
EN7PAF	Cleaning	Acetone	
EPJG3W	Sanding	Sand paper	400, 220
EUWWUA	Visual	Stereoscope	
F8X9KT	None		

TABLE 3

Sample Preparation			
WebCode	Method	Tool Used	Grit Size
FCR3KF	Visual	Stereoscope	
FEJ2YD	None		
FGK4LU	Polishing	Polishing blocks	
FMUAFE	Cleaning	Acetone	
G28VLQ	Sanding	Sand paper	600 & 1200
GPUVPW	None		
GRJ98E	Cleaning	Acetone	
GRKWW7	None		
GUNWM6	Polishing	Dremel	
HABPTN	Polishing	Dremel	
HC3LGH	Visual		
	Sanding		Unknown
	Polishing	Rotary Tool	
HDWJM3	Polishing	Steel wool	
	Cleaning	Acetone	
HFKQAK	Sanding	Sand paper	200-300-600-1500
HKDU24	Visual		
	Polishing	Dremel	
HLPR9U	Sanding	Sand paper	400 y 600
HM6QPX	Polishing	Sand paper	400
HQKHE7	Polishing	Dremel	
HQNZKG	Polishing	Electric Buffer	
J6X4L3	Visual		
J8NEBA	Polishing	Dremel	
J8P6P6	Polishing	Dremel	
JB4MYA	None		
JCFKA6	Visual	Stereoscope	
	Cleaning	Acetone	

TABLE 3

Sample Preparation			
WebCode	Method	Tool Used	Grit Size
JGC4FA	Visual	Microscope	
	Visual	Camera	
JKTNZ6	Visual	Stereoscope	
	Polishing	Dremel	
	Visual	Stereoscope	
JMF84N	Sanding	Sand paper	180, 320, 800
	Cleaning	Ethanol	
	Polishing	Emery paper	1200
	Visual		
JN96A9	Polishing	Dremel	coarse/medium/fine
JT8EMW	Polishing	Dremel	
JZRBR7	Visual		
	Polishing	Dremel	
KFCKPT	None		
KL2ZFK	Polishing	Emery paper	Ultra-fine (1200+)
	Polishing	Ultra-fine polishing paste (automotive)	
KL3XQG	None		
KQU684	Sanding	Sand paper	320 to 600
	Polishing	Sand paper	1200
KQU8T3	Polishing	Dremel	Emery Impregnated Wheel
KQVZTV	Visual	Microscope	
KRM3GW	Cleaning	Acetone	
KT3CE4	None		
KUD4KY	Sanding	Sand paper	120 grit
KYRUQU	Polishing	Sand paper	600
L6XQCE	Sanding	Sand paper	Fine Grit
	Polishing	Buffing Wheel	
LLGJZH	None		
M3WEMP	Sanding	Sand paper	400, 220
MM869Z	Polishing	Dremel	

TABLE 3

Sample Preparation			
<u>WebCode</u>	<u>Method</u>	<u>Tool Used</u>	<u>Grit Size</u>
MREXTX	Cleaning	Acetone	
MUNMH2	Visual	Stereoscope	
MVJGY7	Cleaning	Acetone	
N4QM9E	Visual	Stereoscope	
	Sanding	Sand paper	400
N8LEEP	Polishing	Dremel	
	Cleaning	Acetone	
	Sanding	Dremel	
NEAUAN	Visual		
NF4HU6	Polishing	Dremel	
NGB3CD	Polishing	Sand paper	400
NHRY2R	Polishing	Acetone	
NKGHQW	Polishing	Rotary Tool	
NM6WBZ	Visual	oblique lighting	
	Visual	Stereoscope	
	Visual	Forensic Sil	
	Cleaning	Acetone	
NNWZZZ	None		
NQM244	Polishing	crimped wire wheel	
NTTEV3	None		
NTTHK8	None		
NWP4AP	Polishing	Dremel	
NYJRV7	Sanding	Sand paper	
	Cleaning	Acetone	
P3D7VZ	None		
PAVEGC	Visual	Camera	
PB4QYD	Visual	Stereoscope	
	Polishing	Dremel	
PELXEZ	Visual	Stereoscope	

TABLE 3

Sample Preparation			
WebCode	Method	Tool Used	Grit Size
PVCTWH	Visual	Microscope	
	Sanding	Sand paper	P800
PWKDC6	Polishing	Steel wool	
PXK4RZ	Cleaning	Water	
	Polishing	Dremel	
PZ8MUJ	None		
PZLA77	Polishing	Emery paper	
Q2W932	Sanding	Sand paper	400
QV83YY	Visual	Stereomicroscope (Zeiss Discovery V20)	
QVAL7A	Visual	Stereoscope	
QWG2E2	Sanding	Rotary Tool	Grinding disc 240
QWYYNT	Cleaning	Steel wool	
R33DR9	None		
R6UAF3	Polishing	Dremel	
R9UM28	Visual	Stereoscope	
RAMK8T	Polishing	Dremel	
RCAVP7	Visual		
	Polishing	Dremel	
RD3TVR	Visual	Stereoscope	
RDK2JM	Polishing	flitz	
RDMKQX	Polishing	Dremel	
	Cleaning	water	
RFA4UG	Polishing	Sand paper	
RHYHCY	Visual	Stereoscope	
	Sanding	Sand paper	small
RWH3WT	Sanding	Sand paper	P220
	Polishing	Steel wool	#1, #00
T2N77R	Sanding	Sand paper	220
T6MP4J	Polishing	Rotary Tool	

TABLE 3

Sample Preparation			
WebCode	Method	Tool Used	Grit Size
T72RCD	Polishing	Wet and dry sand paper and water	1200 [See Table 2: Conclusions]
T8UPHY	None		
TBUZFK	Sanding	Sand paper	220, 400
TC8K9U	Visual		
TQMRYZ	Polishing	Dremel	
TRXPCG	None		
TTQMH3	None		
TUREXX	Polishing	Dremel	
TVFU6K	Sanding	Sand paper	220, 400
	Polishing	Sand paper	1000
TXPVAR	None		
U6HMQ	Polishing	Dremel	
	Visual	Stereoscope	
U7BFQA	Visual		
UJHB4K	Polishing	Dremel	
UJMNQG	Visual	eyes	
	Sanding	Dremel	
	Polishing	Sand paper	600
UL9C8M	Grinding	Dremel	
	Polishing	Dremel	
UMJAK6	None		
V3THXD	None		
V6HWGV	Visual	Stereoscope	
	Sanding	Sand paper	220 Grit
V6JJ2F	None		
V89XKY	Visual	Stereoscope	
VCH7V2	Visual	Flashlight	
	Polishing	Steel wool	
VDBYQK	None		

TABLE 3

Sample Preparation			
<u>WebCode</u>	<u>Method</u>	<u>Tool Used</u>	<u>Grit Size</u>
VZ7YVU	Polishing	Dremel	
WAQPUR	None		
WCD9XB	Polishing	Sand paper	1200 wet/dry
WH4J89	None		
WK4YCP	Visual		
	Polishing	Dremel	
WK7GH2	Visual	Microscope	
	Polishing	Dremel	
WMV2J	Sanding	Sand paper	600 and 1000 grit
	Polishing	Dremel	
WMXD8V	Polishing	Dremel	
WPLW6M	Sanding	Sand paper	120 grit
WPPEBX	Visual	Stereoscope	
WRT86W	Polishing	Sand paper	4/0
X42A4Y	Polishing	Dremel	
X6U8AK	Sanding	Sand paper	2500 & 3000 Grit
X8ZNQP	Polishing	Dremel	Green Wheel (Extra Fine)
XA6DRC	Visual	Stereoscope	
XAN8NF	Sanding	Sand paper	1000, 200
XDMHJF	Sanding	Sand paper	80, 400 and 1000
XFRBCT	Visual	Stereoscope	
	Polishing	Dremel	"extra fine"
XGJ7ZM	Visual		
	Polishing	Dremel	Fine red
XKL3R4	None		
XMC7G4	None	Stereoscope	
XPE7DU	Visual	Stereoscope	
	Polishing	Dremel	Cratex extra fine dremel wheel
	Cleaning	Restor-a-Gel Surfacing Solution for metal	

TABLE 3

Sample Preparation			
WebCode	Method	Tool Used	Grit Size
XVJ6NK	Cleaning	Acetone	
YEETZ2	Sanding	Sand paper	800
	Polishing	Steel wool	
YEUCHD	Sanding	Sand paper	600
YJ7ZJA	Sanding	Emery paper	P800
	Polishing	Rubber wheel	
YLR6Q8	Visual	Stereoscope	
YNJ2F2	Polishing	Rotary Tool	
YXM4WR	Visual	Stereoscope	
Z3RJJK	Polishing	Dremel	
Z8PVMX	Polishing	Rotary Tool	
ZAWBWP	Polishing	Dremel	
ZC8TFU	None		
ZF3U9V	Cleaning	Acetone	
ZJ6KNN	None		
ZRUFGC	Polishing	Sand paper	220, 400 y 600
ZW8B32	Visual	Stereoscope	
	Cleaning	Acetone	

Response Summary		Participants: 273
Sample Preparation		
Visual Method:	84	
Sanding Method:	64	
Polishing Method:	115	
None:	53	
<p>Note: Participants may use more than one sample preparation method therefore the total number of preparation methods reported may not be equivalent to the total number of participants.</p>		

Recovery Methods

(listed in order of use)

TABLE 4

Recovery Methods		
WebCode	Method	Time
24N7JV	Acid Etch Method	(Davis Reagent for 2 min, the Turner and Fry's reagents for approx. 10 min with periodic reapplication.)
	Turner's Reagent	
	Fry's Reagent	approx. 10 with periodic reapplication of Turner's reagent
286E8V	25% Nitric Acid	chemical was left on material until a chemical reaction was observed.
	Davis Reagent	chemical was left on material until a chemical reaction was observed.
	Turner's Reagent	chemical was left on material until a chemical reaction was observed.
	Fry's Reagent	chemical was left on material until a chemical reaction was observed.
29XCDG	Fry's Reagent	15 minutes
2DC6A2	Acid Etch Method	25% Nitric Acid, 10 seconds
2GALMV	MagnaFlux	
	Acid Etch Method	Nitric Acid via swabs for five minutes
2JHGM2	Acid Etch Method	1 minute 30
2K9XHV	MagnaFlux	1 minute
	20% NITRIC ACID	2 minutes
	Acidic Ferric Chloride	2 minutes
	H2O	5 minutes
	Acidic Ferric Chloride	3 minutes
	Acidic Ferric Chloride	5 minutes
	Acidic Ferric Chloride	5 minutes
2P3U8L	Acid Etch Method	3
2VU4GJ	Fry's Reagent	7 minutes
2WJE7R	MagnaFlux	
	Acid Etch Method	1 hour
32Y6CM	Acid Etch Method	Seconds
33P9ZM	Magnaflux	
	Ferric Chloride	
	25% Nitric Acid	

TABLE 4

Recovery Methods		
WebCode	Method	Time
3NNULB	MagnaFlux	
	Davis Reagent	10 seconds
	Turner's Reagent	10 seconds
	Fry's Reagent	10 seconds
	Polishing with dremel tool	10 seconds
	Fry's Reagent	10 seconds
3QEXBC	Fry's Reagent	1 or 2 minutes at a time.
3RT6WT	Fry's Reagent	60 secs three times
	Fry's Reagent	30 sec
	Fry's Reagent	30 sec
	10% HCL and Baking soda	HCL then treated with baking soda
	Fry's Reagent	30 secs three times
	Baking soda	item left overnight
	Fry's Reagent	30 sec
	Baking soda	
3UBJ2E	Acidic Ferric Chloride	50 min
3UTD3P	MagnaFlux	
	Davis Reagent	Few seconds per swab.
	Turner's Reagent	Few seconds per swab.
	Fry's Reagent	Few seconds per swab.
3W3K6H	Magnetic Particle Inspection (MPI)	
	Sanding	
	Magnetic Particle Inspection (MPI)	
44VA2C	Fry's Reagent	<1 min
	Turner's Reagent	<1 min
4LWTH9	Fry's Reagent	1-3 minute increments (multiple times)
4N3D9U	MagnaFlux	
	Acid Etch Method	~1 minute
4TFD6L	MagnaFlux	
	Turner's Reagent	5 minutes
	Davis' Reagent	5 minutes
	Fry's Reagent	5 minutes
	MagnaFlux	
	Turner's Reagent	10 minutes
	MagnaFlux	
624ECH	Fry's Reagent	in total, app. 20 mins.
62MGKH	Fry's Reagent	~15 minutes

TABLE 4

Recovery Methods		
WebCode	Method	Time
62P3GY	MagnaFlux	
	Fry's Reagent	A couple minutes
64Q9V6	MagnaFlux	
	Fry's Reagent	2-3 minutes
664P9H	MagnaFlux	
	Acid Etch Method	5-10 minutes total
68FCTH	Fry's Reagent	
6HATFX	MagnaFlux	
	Fry's Reagent	~ 2 min
6KYAMK	MagnaFlux	
	Davis Reagent	Cotton swab used to swipe to apply the reagent over the Item 1 obliterated area
	Turner's Reagent	Cotton swab used to swipe to apply the reagent over the Item 1 obliterated area
	MagnaFlux	
6QQA88	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	30-60 seconds
	Nitric Acid	30-60 seconds
6TVXPH	Fry's Reagent	1 min.
	Wazau's Reagent	1 min.
6WQT7W	Acid Etch Method	5 x 1 minute
72JB2M	Fry's Reagent	2 minutes
767U67	MagnaFlux	
	Fry's Reagent	~20 second intervals
77WXU8	MagnaFlux	
	Fry's Reagent	5 minutes
7C3P36	Fry's Reagent	multiple applications, overall time ~ 40 minutes
7DTRR6	MagnaFlux	
	Fry's Reagent	five minutes
7EUKRY	MagnaFlux	
	Fry's Reagent	a few minutes
	Turner's Reagent	~ one minute
7FLNFY	Fry's Reagent	It was apply, removed and reapply for approximately 5 minutes.
7H89JH	Acidic Ferric Chloride	5 minutes
	Ferric chloride	5 minutes

TABLE 4

Recovery Methods		
WebCode	Method	Time
7LPPE8	MagnaFlux	20 seconds
	Davis Reagent	
	Turner's Reagent	
	Fry's Reagent	
7MNTCP	25% Nitric Acid	5-10 seconds
	Davis' Reagent	5-10 seconds
	Turner's Reagent	5-10 seconds
	Fry's Reagent	5-10 seconds
7NGQHB	Electro-acid	
7PRL43	Fry's Reagent	
7QJHTW	Ferric Chloride	1-2 minutes
7U2N9J	Fry's Reagent	About ten minutes.
7UJTPW	Fry's Reagent	5 minutes of swabbing
	Nitric acid	30 seconds
7WRPCL	MagnaFlux	
82YV6X	Fry's Reagent	approximately 15 minutes
84LF9F	Magnetic Particle Inspection (MPI)	
	Turner's Reagent	briefly
	Fry's Reagent	briefly
84NZ4W	Acidic Ferric Chloride	No more than 10 minutes
87DDME	Davis Reagent	approx: 10 mins
	Turner's Reagent	approx: 10 mins
	Fry's Reagent	approx: 10 mins
8ACMY2	MagnaFlux	10 mins
	Turner's Reagent	15 mins
	Davis' Reagent	15 mins
	Fry's Reagent	10 mins
8DDN2K	MagnaFlux	
	Nitric acid	15 min
	Fry's Reagent	15 min
	Copper sulfate	15 min
	Fry's Reagent	10 min
8F2698	MagnaFlux	
	Fry's Reagent	

TABLE 4

Recovery Methods		
WebCode	Method	Time
8FJD28	MagnaFlux	
	Davis' Reagent	~30 seconds
	Turner's Reagent	~30 seconds
	Fry's Reagent	~30 seconds
	25% Nitric Acid	~30 seconds
	Fry's Reagent	~30 seconds
8XZDAQ	Polish	
	Davis' Reagent	5 seconds per application
	Turner's Reagent	5 seconds per application
	Fry's Reagent	5 seconds per application
8YT9XK	Magnetic Particle Inspection (MPI)	
99YHUC	Magnetic Particle Inspection (MPI)	
9F94GK	Acid Etch Method	10 minutes
9HY6NU	Cupric Ammonium Chloride	1 min (with electricity)
	Nitric Acid	1 min
9LYDT6	MagnaFlux	3 minutes
9RT9WX	Fry's Reagent	2 minutes
9UYQWE	Turner's Reagent	1 minute
	Fry's Reagent	2 minutes
9WHRUL	Acidic Ferric Chloride	25 minutes
9Y8YF4	MagnaFlux	
9YNDGL	MagnaFlux	
	Fry's Reagent	5 minutes
9ZYBWN	MagnaFlux	
	Fry's Reagent	5 minutes
	Acid Etch Method	5 minutes
	Fry's Reagent	30 minutes
A73JTJ	Magnetic Particle Inspection (MPI)	
	Davis	15 seconds
	Turner's Reagent	15 seconds
	Magnetic Particle Inspection (MPI)	
	Davis	15 seconds
	Turner's Reagent	15 seconds
	Magnetic Particle Inspection (MPI)	
Fry's Reagent	15 seconds	
	Turner's Reagent	15 seconds

TABLE 4

Recovery Methods		
WebCode	Method	Time
A74A9E	MagnaFlux	
	Fry's Reagent	~ 15 minutes on and off
A9UKWL	Fry's Reagent	30 sec X 2
AA3K4E	Fry's Reagent	approx. 3-5 min. each application
ACTVTL	Fry's Reagent	alternate between the two for about an hour
	Acid Etch Method	alternate between the two for about an hour
ACUL8G	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	2-3 minutes
AEWQEA	Magnetic Particle Inspection (MPI)	
AGKXZR	Magnetic Particle Inspection (MPI)	
AKM2N8	Acidic Ferric Chloride	5 minutes
AQAMZZ	MagnaFlux	
	Fry's Reagent	~10 min total
AQAPP6	Fry's Reagent	~5-10 min
AQP7KX	Fry's Reagent	8 minutes
AXDNZU	Fry's Reagent	10 seconds intervals for 30 minutes
	Griffin Reagent	15 second intervals for 1 minute
AXPK8K	Fry's Reagent	5
	Oberhofer's Reagent	5
	Fry's Reagent	5
	Oberhofer's Reagent	5
	Fry's Reagent	5
B2N327	Magnetic Particle Inspection (MPI)	
	Davis's Reagent	2 minutes
	Turner's Reagent	2 minutes
	Fry's Reagent	5 minutes
B4VGQK	Acid Etch Method	
B6NEW7	MagnaFlux	
B9MLKN	Acid Etch Method	30 seconds
	Acidic Ferric Chloride	30 seconds
	Fry's Reagent	30 seconds
BAK3DD	Magnetic Particle Inspection (MPI)	
	Turner's Reagent	swiping 10 minutes
	Fry's Reagent	swiping 10 minutes

TABLE 4

Recovery Methods		
WebCode	Method	Time
BAMNAT	MagnaFlux	2 minutes
	Davis Reagent	1 minute
	Heyn's Reagent	1 minute
	Fry's Reagent	3 minutes
BDEWBE	Fry's Reagent	about 8-10 minutes
BEEVUM	MagnaFlux	
	Fry's Reagent	~1 min.
	Acid Etch Method	~ 1min.
BPEHLJ	Fry's Reagent	5 to 10 seconds for 7 times
BT9JJR	Fry's Reagent	almost an hour
BWXNHQ	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	Multiple applications, 10 seconds to 2 minutes
C3VZRT	MagnaFlux	
	Fry's Reagent	1-5 minutes or less
C9HRXZ	MagnaFlux	
	Fry's Reagent	15 minutes
CB9UZ4	MagnaFlux	
CFKWTQ	Davis Reagent	~ 1 minute
	Turner's Reagent	~ 1 minute
	Fry's Reagent	~ 5 Minutes
CH9D2D	MagnaFlux	Two or Three minutes
	Davis Reagent	A few seconds per swab, two swabs, multiple passes per swab.
	Turner's Reagent	A few seconds per swab, two swabs, multiple passes per swab.
	Fry's Reagent	A few seconds per swab, approximately 15 to 20 swabs, multiple passes per swab.
CH9FQH	Acid Etch Method	5 minutes
CHA4F9	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	
CHABBA	Magnetic Particle Inspection (MPI)	
	Turner's Reagent	duration of application of 10 swabs
	Davis	duration of application of 10 swabs
	Fry's Reagent	wiped after application of 5 swabs
CJJBEV	Fry's Reagent	3 minutes
CKXHXR	Fry's Reagent	

TABLE 4

Recovery Methods		
WebCode	Method	Time
CNYJ3U	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	2 minutes
	Fry's Reagent	2 minutes
CPQK7X	Fry's Reagent	1 hour
CQJHCJ	Fry's Reagent	10 min.
CTQQK4	MagnaFlux	
	Acid Etch Method	Davis - 10mins
	Turner's Reagent	10 mins
	Fry's Reagent	5 mins
CUNYTM	Magnetic Particle Inspection (MPI)	
	Ferric Chloride	~3 min
	Modified Fry's Reagent	~5 min
	Ferric Chloride	~5 min
	Magnetic Particle Inspection (MPI)	
	Modified Fry's Reagent	~30 min
	Modified Fry's Reagent	~30 min
D2JMKB	Acid Etch Method	brief wipes
D44C6N	MagnaFlux	5 minutes
	Davis/25% Nitric Acid	10 minutes
DA99TU	Fry's Reagent	2 minutes.
DFGEMF	MagnaFlux	
DQVQHP	Fry's Reagent	3 minutes
	25% Nitric Acid	30 seconds
	Fry's Reagent	4 minutes
	25% Nitric Acid	30 seconds
	Fry's Reagent	2 minutes
DZKH73	MagnaFlux	
	Davis Reagent	
	Fry's Reagent	
	MagnaFlux	
E2UKR2	MagnaFlux	
EBYWH4	MagnaFlux	
	Fry's Reagent	

TABLE 4

Recovery Methods		
WebCode	Method	Time
ED6CXL	Magnetic Particle Inspection (MPI)	
	Magnetic Particle Inspection (MPI)	
	Davis Reagent	Not allowed to sit. Acid was actively applied.
	Magnetic Particle Inspection (MPI)	
	Turner's Reagent	Not allowed to sit. Acid was actively applied.
	Magnetic Particle Inspection (MPI)	
EDQXL7	Turner's Reagent	
	Davis Reagent	
	Fry's Reagent	
EFX9LF	Fry's Reagent	5 mins
EJWL6Y	MagnaFlux	
	Acid Etch Method	swabs / 2 -3 minutes / 20% Nitric Acid
	Acid Etch Method	swabs / 2 - 3 minutes / Acidic Ferric Chloride
	Fry's Reagent	swab / 4 -6 seconds / Fry's Reagent
EJXGQQ	MagnaFlux	
EN7PAF	Cupric ammonium chloride solution	
EPJG3W	MagnaFlux	
	Fry's Reagent	Three minutes approximately
EUWWUA	Magnetic Particle Inspection (MPI)	
	Turner's Reagent	1-2 seconds
	Fry's Reagent	1-2 seconds
	25% Nitric Acid	1-2 seconds
F8X9KT	Acid Etch Method	
FCR3KF	Magnetic Particle Inspection (MPI)	
	Acid Etch Method	minutes (Davis / multiple applications)
	Turner's Reagent	minutes (multiple applications)
	Fry's Reagent	minutes (multiple applications)
	Acid Etch Method	less than 1 minute (Ferric Chloride - the yellow/orange color enhanced characters for taking photograph)
FEJ2YD	Acid Etch Method	10 min
FGK4LU	Magnetic Particle Inspection (MPI)	
	Acid Etch Method	Brushed on with swabs in ~5sec intervals for ~5-10mins total
FMUAFE	[Initials]-Examination and Restoration of Erased Identification Numbers/Markings.	8 minutes
G28VLQ	Magnetic Particle Inspection (MPI)	

TABLE 4

Recovery Methods		
WebCode	Method	Time
GPUVPW	Fry's Reagent	Repeated ~ 10-15 min applications for approximately 1.5-2 hours
GRJ98E	Fry's Reagent	
GRKWW7	Fry's Reagent	Less than 5 mins
GUNWM6	MagnaFlux	
	Fry's Reagent	30 minutes
	Turner's Reagent	60 minutes
	Acid Etch Method	Davis' Reagent, 40 minutes
	Acid Etch Method	Nitric Acid, 30 minutes
	MagnaFlux	
	Acid Etch Method	Fort's Solution, 20 minutes
	MagnaFlux	
	Acid Etch Method	Fort's Solution, 20 minutes
	Acid Etch Method	Aqua Regia, 30 minutes
	Fry's Reagent	20 minutes
	Acid Etch Method	Davis' Reagent, 30 minutes
	Turner's Reagent	60 Minutes
	Acid Etch Method	Davis' Reagent, 40 minutes
	Acid Etch Method	Aqua Regia, 30 minutes
	Acid Etch Method	Nitric Acid, 10 minutes
	Acid Etch Method	Fort's Solution, 30 minutes
	Acid Etch Method	Aqua Regia, 20 minutes
HABPTN	Magnetic Particle Inspection (MPI)	
	Turner's Reagent	30 seconds to 1 minute
	Fry's Reagent	2 to 3 minutes at a time
	Magnetic Particle Inspection (MPI)	
HC3LGH	MagnaFlux	
	Fry's Reagent	5 minutes
HDWJM3	Turner's Reagent	15 minutes
	Fry's Reagent	15 minutes
	Fry's Reagent	20 minutes
HFKQAK	Acidic Cuperic Sulfate	1-3 mins
HKDU24	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	10-20 minutes spent processing.
	Turner's Reagent	Approximately 10 minutes spent processing.
HLPR9U	MagnaFlux	

TABLE 4

Recovery Methods		
WebCode	Method	Time
HM6QPX	MagnaFlux	
	Acid Etch Method	5min
	Fry's Reagent	3min
HQKHE7	Magnetic Particle Inspection (MPI)	
	Turner's Reagent	2 minutes
	Fort's Reagent	3 minutes
	Aqua Regia	2 minutes
HQNZKG	Fry's Reagent	3 minutes
	Nitric Acid	1 minute
J6X4L3	MagnaFlux	
	Acid Etch Method	10 minutes Davis Reagent
J8NEBA	MagnaFlux	
	Acid Etch Method	2 hours
J8P6P6	Fry's Reagent	20 seconds to several minutes
	Turner's Reagent	20 seconds to several minutes
	MagnaFlux	20 seconds to several minutes
JCFKA6	Electro-magnetic	
	Fry's Reagent	10 minutes
	Forensic Sil	
JGC4FA	Magnetic Particle Inspection (MPI)	
JKTNZ6	MagnaFlux	
	Acid Etch Method	Davis's Etchant for 5 minutes approximately
	MagnaFlux	
JMF84N	Fry's Reagent	2 mins
JN96A9	Fry's Reagent	A few minutes, wipe, repeat
JT8EMW	MagnaFlux	
	Fry's Reagent	15 minutes
JZRBR7	Magnetic Particle Inspection (MPI)	
	25% Nitric Acid	~1 min
	Turner's Reagent	~1 min
	Davis	~1 min
	25% Nitric Acid	2-5 mins, with reapplications
KFCKPT	MagnaFlux	Davis 2min, Turners 2min
KL2ZFK	Fry's Reagent	30-mins total

TABLE 4

Recovery Methods		
WebCode	Method	Time
KL3XQG	Magnetic Particle Inspection (MPI)	
	Davis' and Turner's Reagents	~2 mins.
	Fry's Reagent	< 1 min
KQU684	Acid Etch Method	Nitric Acid, up to 5 Seconds
KQU8T3	Fry's Reagent	1 minute
KQVZTV	MagnaFlux	
	David's Reagent	5-10 min
	MagnaFlux	
	Turner's Reagent	5-10 min
	MagnaFlux	
	Fry's Reagent	15-20 min
KRM3GW	Magnetic Particle Inspection (MPI)	
	Turner's Reagent	5 Minutes
	Fry's Reagent	30 Seconds (used as a highlighter)
KT3CE4	Magnetic Particle Inspection (MPI)	30 sec
	Fry's Reagent	10 sec
	Turner's Reagent	10 sec
	Davis	10 sec
KUD4KY	Turner's Reagent	2 minutes
	Fry's Reagent	2minutes
KYRUQU	Fry's Reagent	5-10 minutes
L6XQCE	Fry's Reagent	5 minutes
LLGJZH	MagnaFlux	
M3WEMP	MagnaFlux	Not used
MM869Z	Fry's Reagent	10 minutes of rubbing/wiping
MRETX	chemical method: WAZAU and MIPRO ACIER	Fifteen (15) minutes
MUNMH2	MagnaFlux	
	Turner's Reagent	1 second
	Fry's Reagent	1 second
MVJGY7	Fry's Reagent	10-15 minutes
N4QM9E	MagnaFlux	
	Fry's Reagent	seconds - wiped on with swab and wiped off with kimwipe
	Turner's Reagent	seconds - wiped on with swab and wiped off with kimwipe

TABLE 4

Recovery Methods		
WebCode	Method	Time
N8LEEP	Fry's Reagent MagnaFlux	few minutes
NEAUAN	Magnetic Particle Inspection (MPI)	
NF4HU6	Fry's Reagent	30 - 45 seconds each time, 5 times
NGB3CD	Acid Etch Method	Many successive applications of 3-5 sec each
NHRY2R	Fry's Reagent	10 mins
NKGHQW	Acid Etch Method	10 minutes
NM6WBZ	Electro-magnetic acetone cleaning Fry's Reagent acetone cleaning	5 minutes
NNWZZZ	MagnaFlux Turner's Reagent deionized water	Swabbed repeatedly for approximately an hour to an hour and a half Swabbed a few passes during processing with Turner's
NQM244	MagnaFlux Acidic Ferric Chloride Fry's Reagent	5 seconds 5 seconds
NTTEV3	MagnaFlux Fry's Reagent	
NTTHK8	Magnetic Particle Inspection (MPI) Polishing Magnetic Particle Inspection (MPI) Acid Etch Method Polishing Magnetic Particle Inspection (MPI) Acid Etch Method	
NWP4AP	Fry's Reagent	10 min
NYJRV7	Acid Etch Method Fry's Reagent	5 minutes 5 minutes

TABLE 4

Recovery Methods		
WebCode	Method	Time
P3D7VZ	Turner's Reagent	1 minute
	10% Sodium Hydroxide	30 seconds
	Nitric Acid	30 seconds
	Fry's Reagent	1 minute
	MagnaFlux	1 minute
	Fry's Reagent	1 minute
	MagnaFlux	1 minute
	Zinc Alloy Solution #1 Zinc Alloy Solution #2	1 minute 1 minute
PAVEGC	MagnaFlux	
	Davis reagent	~2 mins
	MagnaFlux	
	Turner's Reagent	~2 mins
	MagnaFlux	
	Davis reagent	~10 mins
PB4QYD	Fry's Reagent	1 min.
	Turner's Reagent	1 min.
PELXEZ	MagnaFlux	
	Ferric Chloride	
PVCTWH	Fry's Reagent	5-15 mins for full recovery
PWKDC6	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	Approx. thirty to forty minutes
PXK4RZ	MagnaFlux	
	Fry's Reagent	2 minutes total
PZ8MUJ	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	10 min
PZLA77	Fry's Reagent	
	Turner's Reagent	
	Davis Reagent	
	Nitric Acid	
Q2W932	MagnaFlux	
	Fry's Reagent	Several minutes
QV83YY	MagnaFlux	
	Ferric Chloride	
	Nitric Acid	

TABLE 4

Recovery Methods		
WebCode	Method	Time
QVAL7A	MagnaFlux	
	Davis Reagent	10 min
	Turner's Reagent	10 min
	Fry's Reagent	10 min
	MagnaFlux	
	Acid Etch Method	25% Nitric w/ Davis highlight, 2 min
QWG2E2	MagnaFlux	
	Acidic Ferric Chloride	Apply in 3 times - few seconds each time
QWYYNT	Turner's Reagent	five minutes
	Fry's Reagent	five minutes
R33DR9	MagnaFlux	
	MagnaFlux	
	Davis	1 min
	MagnaFlux	
	Davis	1 min
	MagnaFlux	
R6UAF3	MagnaFlux	
	Fry's Reagent	5 mins
R9UM28	Acid Etch Method	5 minutes
RAMK8T	Davis	15 seconds
	Turner's Reagent	15 seconds
	Fry's Reagent	15 seconds
RCAVP7	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	20 min (overall)
	Magnetic Particle Inspection (MPI)	
RD3TVR	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	5 minutes of continual swabbing
RDK2JM	Magnetic Particle Inspection (MPI)	
RDMKQX	MagnaFlux	
	Fry's Reagent	2 mins
RFA4UG	Acid Etch Method	
RHYHCY	Magnetic Particle Inspection (MPI)	
	Davis Reagent	3 minutes
	Turner's Reagent	2 minutes
	Magnetic Particle Inspection (MPI)	

TABLE 4

Recovery Methods		
WebCode	Method	Time
RWH3WT	Magnetic Particle Inspection (MPI)	
	Davis reagent	Rubbed on with cotton swab, then wiped off to visualize. Repeated until I no longer saw changes/characters revealed.
	Turner's Reagent	Rubbed on with cotton swab, then wiped off to visualize. Repeated until I no longer saw changes/characters revealed.
	Fry's Reagent	Rubbed on with cotton swab, then wiped off to visualize. Repeated until I no longer saw changes/characters revealed.
T2N77R	Fry's Reagent	2 minutes, in increments.
T6MP4J	MagnaFlux	
	Fry's Reagent	Swabbed reagent over surface for approximately 30 minutes
T72RCD	Method 9, version 2.1. with Fry's Reagent	Approximately 1 hr and 5 mins in total.
T8UPHY	MagnaFlux	
TBUZFK	MagnaFlux	
TC8K9U	Fry's Reagent	15 minutes
TQMRYZ	Fry's Reagent	approximately 5 min.
TRXPCG	MagnaFlux	
	Fry's Reagent	approx. one minute alternating with Turner's seven times
	Turner's Reagent	approx. one minute alternating with Fry's seven times
TTQMH3	Acid Etch Method	10 MINUTES
TUREXX	Fry's Reagent	several seconds
TVFU6K	MagnaFlux	
TXPVAR	Fry's Reagent	2 minutes
U6HMQ	Acid Etch Method	2 minutes
U7BFQA	Fry's Reagent	10 Minutes
UJHB4K	DAVIS REAGENT	10 TO 15 SECONDS
	Turner's Reagent	10 TO 15 SECONDS
	Fry's Reagent	10 TO 15 SECONDS
UJMNQG	MagnaFlux	
	Turner's Reagent	
	Davis' Reagent	
	Fry's Reagent	
UL9C8M	The sample was eating away chemical solution $\text{CuCl} \cdot 2\text{H}_2\text{O} + \text{HCl} + \text{H}_2\text{O}$	Time 30 min.

TABLE 4

Recovery Methods		
WebCode	Method	Time
UMJAK6	Fry's Reagent	15-20 sec intervals
V3THXD	MagnaFlux	
	Fry's Reagent	rubbed with swab containing reagent
V6HWGV	Magnetic Particle Inspection (MPI)	
	Davis Reagent	5 minutes
	Turner's Reagent	5 minutes
	Fry's Reagent	5 minutes
V6JJ2F	Griffin Reagent	10 seconds
	Fry's Reagent	10 seconds
	25% Nitric Acid	10 seconds
V89XKY	MagnaFlux	
VCH7V2	25% Nitric Acid	10 seconds
VDBYQK	MagnaFlux	
	Davis' Reagent	1 minute
	Turner's Reagent	1 minute
	Fry's Reagent	1 minute
	MagnaFlux	
	Fry's Reagent	1 minute
VZ7YVU	MagnaFlux	
	Fry's Reagent	5 minutes
WAQPUR	Fry's Reagent	~3-5 minutes
WCD9XB	Fry's Reagent	4 minutes
WH4J89	MagnaFlux	
	Turner's Reagent	a few seconds
	Acid Etch Method	25% Nitric was wiped on and off several times
WK4YCP	MagnaFlux	
	Davis	Less than 1 minute
	Turner's Reagent	Less than 1 minute
WK7GH2	MagnaFlux	
	Davis	Applied with cotton swab
	Turner's Reagent	Applied with cotton swab
	Fry's Reagent	Applied with cotton swab
WMW2J	MagnaFlux	
	Davis Reagent	30 seconds
	Turner's Reagent	30 seconds
	Fry's Reagent	30 seconds

TABLE 4

Recovery Methods		
WebCode	Method	Time
WMXD8V	Acidic Ferric Chloride	approximately 35 seconds
	Ferric chloride	approximately 35 seconds
	Fry's Reagent	approximately 35 seconds
	Turner's Reagent	approximately 35 seconds
	Davis	approximately 35 seconds
	Magnetic Particle Inspection (MPI)	total 10 minutes
WPLW6M	Turner's Reagent	2 minutes
	Fry's Reagent	2 minutes
WPPEBX	Fry's Reagent	10 MINUTES
WRT86W	MIPRO Acier	10 min
X42A4Y	MagnaFlux	
	MagnaFlux	~20 minutes
X6U8AK	MagnaFlux	
	Fry's Reagent	10-15 mins
X8ZNQP	MagnaFlux	
	Fry's Reagent	~Five minutes total
XA6DRC	MagnaFlux	
XAN8NF	MagnaFlux	
XDMHJF	MagnaFlux	
XFRBCT	Magnetic Particle Inspection (MPI)	
	Davis Reagent	~2-3 minutes
	Fry's Reagent	~1 min x 4
XGJ7ZM	Fry's Reagent	5 minutes
	Fry's Reagent	8 minutes
	Fry's Reagent	9 minutes
	Fry's Reagent	9 minutes
XKL3R4	MagnaFlux	
	Acid Etch Method	
XMC7G4	Davis Reagent	15 min
	Fry's Reagent	5 min
XPE7DU	Restor-A-Gel for Steel	Off-and-on for 2.5 hours.
XVJ6NK	Acid Etch Method	15 minutes
YEETZ2	Fry's Reagent	5-10 minutes
	Phosphoric/Nitric Acid	5-10 seconds
YEUCHD	MagnaFlux	
	Fry's Reagent	wiped acid with q-tip (approximately 5-10 min)

TABLE 4

Recovery Methods		
WebCode	Method	Time
YJ7ZJA	Fry's Reagent	11:28 minutes
YLR6Q8	Magnetic Particle Inspection (MPI)	
YNJ2F2	Fry's Reagent	5 minutes
	Nitric Acid	2 minutes
YXM4WR	MagnaFlux	
	Fry's Reagent	3 seconds a swipe
	Turner's Reagent	3 seconds a swipe
	Davis Reagent	3 seconds a swipe
	MagnaFlux	
Z3RJJK	Magnetic Particle Inspection (MPI)	
	Davis	1 minute
	Turner's Reagent	1 minute
	Fry's Reagent	1 minute
Z8PVMX	Fry's Reagent	3 minutes
	Turner's Reagent	2 minutes
ZAWBWP	Davis reagent	1 minute
	Turner's Reagent	1 minute
	Zinc alloy etching solutions #1 and #2	1 minute
	Fry's Reagent	5 minutes
ZC8TFU	MagnaFlux	
ZF3U9V	Acid Etch Method	10 - 15 minutes
ZJ6KNN	Acid Etch Method	
	Fry's Reagent	3-5 minutes (continuous swabbing)
ZRUFGC	Acid Etch Method	several minutes 4 or 5 (HN03), 2 minutes (FRY)
ZW8B32	MagnaFlux	
	Acid Etch Method	swipes with swabs for few minutes
	MagnaFlux	

Response Summary	Participants: 271
Recovery Methods	
Chemical Processing: 233	
Magnetic Processing: 144	
<p>Note: Participants may use more than one sample recovery method therefore the total number of recovery methods reported may not be equivalent to the total number of participants.</p>	

Additional Comments

TABLE 5

WebCode	Additional Comments
286E8V	The obliterated serial number, located on the center of the metal block was chemically processed. Attempts to restore the obliterated serial number were successful. The restored serial number is "E9NDK7".
3NNULB	Magnaflux, as a non-destructive method, was done prior to the initial polishing of Item 01 during the order of steps listed in the restoration process. After polishing, the chemical etching process as previously listed then took place.
6QQA88	Acids are applied by swiping/brushing with swab(s). Timing of how long the acid stays is not crucial. It is applied until characters appear and the examiner is satisfied with the results or the metal degrades and characters disappear.
7C3P36	1A = Steel bar stock serial number removed. 1B = Aluminum bar stock
7FLNFY	Test Completed By [Name].
82YV6X	Reagent was applied with cotton- tipped applicators for two minute intervals, 6-8 times
87DDME	Alternated applications of Turner's and Fry's reagents
8FJD28	TECHNICAL NOTES: Serial number restoration is dependent upon multiple factors to include the original stamping/engraving method, material type, obliteration method, and depth of material removed. The reported characters convey only the appearance of characters or partial characters that the examiner observed after the application of standard serial number restoration techniques. These characters are not considered absolute to the exclusion of other possible characters with similar shape or form.
9F94GK	upon analysis, I am opinion the obliterated serial number on cold rolled steel was restored and intepreted as 'E9NDK7'
9HY6NU	Methods: Serial Number Restoration: 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 Restoration: Except for 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.
9ZYBWN	The directions do not indicate which direction the arrow should be pointed to orient the sample (up or down?) just that the arrow is there to distinguish orientation.
AGKXZR	Grey Magnaflux was used
B6NEW7	Re Magnaflux recovery method: AC white contrast over polished (2500 grit) area then black dye in oil in magnetic field

TABLE 5

WebCode	Additional Comments
CQJHCJ	The obliterated area was sanded with 180 grit sandpaper until mirror-like finish. After first application of Turne's chemical reagent, waiting approximately five minutes and the serial number was partially visible. The obliterated area was sanded and treated with Fry's chemical reagent twice, waiting approximately another ten minutes and the serial number was restored. (E9NDK7).
CTQQK4	TECHNICAL NOTES: Serial number restoration is dependent upon multiple factors to include the original stamping/engraving method, material type, obliteration method, and depth of material removed. The reported characters convey only the appearance of characters or partial characters that the examiner observed after the application of standard serial number restoration techniques. These characters are not considered absolute to the exclusion of other possible characters with similar shape or form.
DQVQHP	Successful positive controls were performed using a laboratory reference steel bar and Fry's Reagent, Davis Reagent, Turner's Reagent and 25% Nitric Acid.
DZKH73	TECHNICAL NOTES: Serial number restoration is dependent upon multiple factors to include the original stamping/engraving method, material type, obliteration method, and depth of material removed. The reported characters convey only the appearance of characters or partial characters that the examiner observed after the application of standard serial number restoration techniques. These characters are not considered absolute to the exclusion of other possible characters with similar shape or form.
ED6CXL	The surface was smooth and even upon receipt. Acid reagents were not allowed to sit. Acid reagents were actively applied with a left-to-right stroke of a cotton swab saturated with the respective reagent.
EJXGQQ	Internal LIMS item numbers were used. Item 01 = Item 01-01 (LIMS number) For the restoration process, 2 polishing steps were performed, and 2 magnaflux steps were performed.
HABPTN	MPI was attempted prior to polishing. It was then attempted again after polishing. Acid etch was completed and MPI was attempted one final time.
HFKQAK	by using chemical Method (Acidic Cupric Aulfate) and in few mins the Serial Number appeared (E9NDK7)
HM6QPX	This year's sample is consistent with those of other years, where an alteration due to wear is observed and both the magnetic method and the acid method complement each other to give a good result.
J8P6P6	Q-1 IS ONE SILVER METAL OBJECT (MO-1), CONSISTENT WITH FERROUS METAL BAR STOCK. THE SERIAL NUMBER WAS OBLITERATED BY AN UNKNOWN METHOD; HOWEVER, MO-1 DISPLAYS DEEP MILLING MARKS ON THE OBLITERATED AREA. THE SERIAL NUMBER WAS RESTORED USING A COMBINATION OF POLISHING, CHEMICAL ETCHING TECHNIQUES, AND THE USE OF MAGNETIC PARTICLE INSPECTION (MAGNAFLUX). SERIAL NUMBER OF "E9NDK7" SUCCESSFULLY RECOVERED. MO-1 MARKED WITH CASE NUMBER "23-5250A" FOR IDENTIFICATION.
JKTNZ6	There may be additional evidence associated with this case. Please refer to any previously completed case records for the lab numbers listed above. The interpretation of the data and authorization of the results was performed by the undersigned forensic analyst. Other staff members may have performed laboratory activities concerning evidence associated with this report. For a complete listing of all staff members who performed laboratory activities in this case, please contact the laboratory via the telephone number above. [Number not provided]

TABLE 5

WebCode	Additional Comments
JT8EMW	All measurements are approximate. Technical Notes: Serial number restoration is dependent upon multiple factors to include the original stamping/engraving method, material type, obliteration method, and depth of material removed. The reported characters convey only the appearance of characters or partial characters that the examiner observed after the application of standard serial number restoration techniques. These characters are not considered absolute to the exclusion of other possible characters with similar shape or form.
JZRBR7	Flashlight also used during processing to use oblique lighting.
KFCCKPT	Technical Notes: Serial number restoration is dependent upon multiple factors to include the original stamping/engraving method, material type, obliteration method, and depth of material removed. The reported characters convey only the appearance of characters or partial characters that the examiner observed after the application of standard serial number restoration techniques. These characters are not considered absolute to the exclusion of other possible characters with similar shape or form.
KL2ZFK	5 characters of serial recovered and legible within 5 minutes of application of Fry's Reagent. Further time was needed to better visualise last character (letter D in serial) - never fully recovered but sufficient to identify letter.
KRM3GW	Surface area was cleaned with acetone prior to restoration. Magnetic Particle Inspection utilizing Magnaflux with an attached magnet yielded a partial serial number of ?9NDK7. Frys with Tuners as a highlighter was utilized to chemically restore the serial number to read E9NDK7.
MUNMH2	Alternating Turner's and Fry's during restoration
NQM244	The number was first restored to read H9NDK7.
RWH3WT	I was able to visualize E9NDK7 with MPI. I performed chemical etching to verify the MPI result.
T72RCD	Peer and Administrative reviews conducted as per internal lab requirements.
V6HWGV	The sanding preparation step was performed after the magnetic particle inspection.
WMV2J	Evidence inventoried on 7/19/23. Rectangular magnetic metal bar. Area appeared obliterated by an unknown abrasive method. Suspected obliterated area was sanded (600 grit sandpaper, 100 grit sandpaper), polished (dremel wheel and polishing wheel, fritz metal polish) magnetically (black magnaflux) treated, and chemically treated (Davis, Turner's, Fry's). Serial number restored to read E9NDK7
YJ7ZJA	This restoration was concurred by [Initials].

-End of Report-
(Appendix may follow)

Test No. 23-5250: Serial Number Restoration

DATA MUST BE SUBMITTED BY **Aug. 28, 2023, 11:59 p.m. EDT** TO BE INCLUDED IN THE REPORT

Participant Code: U1234A

WebCode: UYWC3V

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

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.

-Use caution when handling the samples, as there may be sharp areas on the Item 1 bar stock and aluminum standard.

-An arrow symbol has been stamped on the Item 1 barstock to distinguish orientation.

Items Submitted (Sample Pack SNR1):

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

1.) Please record the restored characters below.

The serial number on this material consists of 6 characters.

Item 1:

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

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

3.) What methods were used to prepare the sample prior to attempts at recovery?

eg. Sanding, Polishing, Visual, etc. (Please describe in order.)

Method	Tool Used	If sanding was done what grit size was used?
<input type="text"/>	<input type="text"/>	<input type="text"/>

4.) What recovery methods were used during your examination?

eg. 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?
<input type="text"/>	<input type="text"/>

5.) Additional Comments

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

RELEASE OF DATA TO ACCREDITATION BODIES

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

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

- This participant's data is intended for submission to ASCLD/LAB, ANAB, and/or A2LA. (Accreditation Release section below must be completed.)
- This participant's data is not intended for submission to ASCLD/LAB, ANAB, and/or A2LA.

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

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

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

A2LA Certificate No.

Step 2: Complete the Laboratory Identifying Information in its entirety.

Authorized Contact Person and Title

Laboratory Name

Location (City/State)