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FORENSIC TESTING PROGRAM

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Serial Number Restoration
Test No. 24-5250 Summary Report

Each sample set contained a piece of bar stock with 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 asked to restore the obliterated serial number using their existing protocols. Data were returned from 294 participants and are compiled into the following tables:

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

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

Manufacturer's Information

Each sample set contained one piece of bar stock with an obliterated serial number and a piece of aluminum bar stock intended as a standard for the size, shape, and positioning of the stamped alphanumeric characters. Participants were asked to restore the obliterated serial number utilizing their laboratory restoration methodologies and report the recovered serial number.

SAMPLE PREPARATION: Each piece of cold rolled steel bar stock (Item 1) was stamped with six characters (42HKJ1), along with an upward arrow for orientation, and then obliterated by a grinding machine. Additionally, a piece of aluminum bar stock was included in the sample set 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: Predistribution results were consistent with each other and the manufacturer's preparation information. All laboratories restored the six obliterated characters and chemical restoration methods were used.

Character 1	Character 2	Character 3	Character 4	Character 5	Character 6
4	2	H	K	J	1

Summary Comments

This test was designed to allow participants to assess their proficiency in the restoration of an obliterated serial number. Participants were supplied with one piece of bar stock with 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. The serial number to be restored consisted of six characters (42HKJ1). Refer to the Manufacturer's Information for preparation details.

In Table 1 Recovered Characters, 250 of the 294 responding participants (85%) restored all six characters. Twenty participants restored five of the six characters and of those, ten participants reported two options for one character. Ten participants restored four of the six characters and of those, five participants reported two options for at least one character. Of the remaining fourteen participants, four participants restored at least two of the six characters, and the remaining eight participants could not restore any characters. It was noted that characters 3 (H) and 5 (J) were more difficult to restore. Of the 28 participants reporting inconsistently for character 3 or leaving it blank, two reported that the character was either “N” or “H” and nine reported in their conclusions that “H” may have been the character. Of the 26 participants reporting inconsistently for character 5 or leaving it blank, five reported in their conclusions that the character may have been a “J” and six either reported “O” or mentioned in their conclusions that this may have been the character.

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

Recovered Characters

Please record the restored characters below.

TABLE 1

Recovered Characters						
WebCode	Character 1	Character 2	Character 3	Character 4	Character 5	Character 6
27BQH2	4	2	H	K	J	1
2BRY72	4	2	H	K	J	1
2DBZZM	4	2	H	K	J	1
2E7TJD	4	2	H	K	J	1
2FXP98	4	2	H	K	J	1
2J2NJZ	4	2	H	K	J	1
2LKPDL	?	2	H	K	?	1
2PKZAL	4	2	H	K	J	1
2RUV4Q	4	2	H	K	J	1
2TLUHP	4	2	N/H	K	J	1
2UDWYD	4	2	H	K	J	1
2W6VDB	4	2	H	K	J	1
2W8GBC	4	2	H	K	J	1
2XFNFQ	4	2	H	K	J	1
2Y72PV	4	2	H	K	J	1
2YQH6Y	4	2	H	K	J	1
2YYKA4	4	2	H	K	J	1
39T9CR	4	2	H	K	J	1
3AJLMX	4	2	H	K	J	1
3DPZJ4	4	2	H	K	J	1
3PJDGE	4	2	*	K	J	1
3RNT2Y	4	2	H	K	J	1
3UTFJA	4	2	H	K	J	1
3V3NNN	4	2	H	K	J	1
3V67UZ	4	2	?	K	J	1
4338LD	?	?	?	?	?	?
4K46TF	4	2	H	K	0	1
4KHR43	4	2	H	K	J	1
4MM7M2	4	2	H	K	J	1
4N2TYN	4	2	H	K	J	1
4ZH7RQ	4	2	H	K	J	1
647M7N	4	2	H	K	J	1

TABLE 1

	Recovered Characters					
WebCode	Character 1	Character 2	Character 3	Character 4	Character 5	Character 6
6JQVF9	4	2	H	K	J	1
6K2UC3	4	2	H	K	J	1
6RFTVF	4	2	H	K	J	1
6U9C8F	4	*	*	K	J	1
6XMAF3	?	?	?	?	?	?
724UZW	4	2	H	K	J	1
73QMLY	4	2	H	K	J	1
73VQNQ	4	2	H	K	J	1
74BCXR	4	2	H	K	J	1
77FRJC	A	F	H	K	C	1
78QKLR	4	2	H	K	J	1
79GWWX	4	2	H	K	J	1
7EMQQT	4	2	H	K	J	1
7FLMN4	4	2	M	K	J	1
7H6NHP	A	2	H	K	J	1
7JYMKU	4	2	H	K	J	1
7VEGX9	4	2	H	K	J	1
7X7DM3	4	2	H	K	J	1
7ZPEHN	4	2	H	K	J	1
822JJJ	4	2	H	K	J	1
83CFZH	4	2	H	K	J	1
84LKD7	4	2	H	K	J	1
8CKZCQ	4	2	H	K	J	1
8L8YZB	4	2	H	K	J	1
8QG337						
8XV8CH	4	2	H	K	J	1
8YRE7V	4	2	H	K	J	1
9AL6EF	4	2	H	K	J	1
9CVZ7Z	4	2	H	K	J	1
9URPZ9	4	2	H	K	J	1
A3JM4M	4	2	*	K	J	1
AAXF86	4	2	H	K	J	1
ACRZJ6	4	2	H	K	J	1
AD6NKW	4	2	H	K	J	1

TABLE 1

	Recovered Characters					
WebCode	Character 1	Character 2	Character 3	Character 4	Character 5	Character 6
AEBZDQ	4	2	H	K	J	1
AEENV6	4	2	H	K	J	1
ATX7N9	4	2	H	K	J	1
AV6E3K	4	2	H	K	J	1
AWVRDQ	4	2	H	K	J	1
B27BZP	4	2	H	K	J	1
B7MHNP	4	2	H	K	J	1
B97JHC	4	2	H	K	J	1
B9MZBJ	4	2	H	K	J	1
BB7RML	4	2	H	K	J	1
BBVYWD	4	2	H	K	@	1
BLB3TB	4	2	H	K	J	1
BM79MN	4	2	H	K	J	1
BVXZKG	4	2	H	K	J	1
BYHNKG	4	2	H	K	J	1
C4B3R4	4	2	?	K	J	1
C7FQ9E	4	2	H	K	J	1
CB6G7A	4	2	H	K	0	1
CC4D4J	4	2	H	K	J	1
CGB2EZ	4	2	H	K	J	1
CKV3AL	4	2	H	K	J	1
CKZ7CD	4	2	H	K	J	1
CLMYYF	4	2	H	K	J	1
CNTJN2	4	2	H	K	J	1
CQL4Z2	4	2	H	K	J	1
CT76VM	4	2	H	K	J	1
CX3TCU	4	2	0/D	K	J	1
DJW7PH	4	2	H	K	J	1
EATA7D	4	2	H	K	J	1
ECQZ4C	4	2	H	K	J	1
EDLKQC	4	2	H	K	J	1
EFPCZC	4	2	H	K	J	1
EFRWVR	4	2	H	K	J	1
EKNLCY	4	2	H	K	J	1

TABLE 1

	Recovered Characters					
WebCode	Character 1	Character 2	Character 3	Character 4	Character 5	Character 6
EM9L8L	4	2	H	K	J	1
EQBBYU	4	2	H	K	J	1
EY27NC	4	2	H	K	J	1
EY6K2D	4	2	H	K	J	1
F3FZ2N	4	2	H	K	J	1
F6D3HE	4	2	H	K	J	1
FC6NYC	4	2	H	K	J	1
FECWC3	2	1	1	K	0	1
FG36B7	4	2	H	K	J	1
FHV2ZZ	4	?	?	K	J	1
FK38L2	4	2	H	K	J	1
FK7U4F	4	2	H	K	J	1
FMPVX2	4	2	H	K	J	1
FQ9ZFW	4	2	H	K	J	1
FVKXZD	4	2	H	K	J	1
FZWY83	4	2	H	K	J	1
GDGTZ8	4	2	H	K	J	1
GHAMA2	4	2	H	K	J	1
GKEF2F	4	2	H	K	J	1
GKJRPB	4	2	H	K	J	1
GKLDLR	4	2	H	K	J	1
GL8E4K	4	2	H	K	J	1
GM7CQ9	4	2	H	K	J	1
GNYBTE	4	2	H	K	J	1
GQLWL2	4	2	H	K	J	1
GTCVZZ	4	2	H	K	J	1
GU6XFN	4	2	H	K	J	1
GVFQJ3	4	2	*	K	J	1
GVWWUL	4	2	H	K	J	1
H3EVQD	4	2	H	K	J	1
H3YC7F	4	2	H	K	J	1
HEEC4M	4	2	H	K	J	1
HEP7FN	4	2	H	K	J	1
HT88ME	4	2	H	K	J	1

TABLE 1

	Recovered Characters					
WebCode	Character 1	Character 2	Character 3	Character 4	Character 5	Character 6
HW7JJE			H	K	J	1
HZ8DRG	4	2	H	K	J	1
J2FYR3	4	2	?	K	J	1
J7NHQV	4	2	H	K	J	1
J9KNK9	4	2	H	K	J	1
JDREME	4	2	H	K	J	1
JFBFHZ	4	2	H	K	J	1
JKBHRV	4	2	H	K	J	1
JL4EGP	4	2	H	K	J	1
JLKPWA	4	2	H	K	J	1
JM2MPA	4	2	H	K	J	1
JMVJMH	4	2	H	K	J	1
JPMFCC	4	2	H	K	J	1
JQZXK9	4	2	H	K	J	1
JRQBVE	4	2	H	K	J	1
JT36G7	4	2	H	K	J	1
K4KWPG	4	2	H	K	J	1
K8JBAK	4	2	H	K	J	1
KBZJXK	4	2	H	K	J	1
KEJKT7	4	2	H	K	J	1
KHHXFW						
KKNNGJ	4	2	H	K	J	1
KR6YW7	4	2	H	K	J	1
KWF8WB	4	2	H	J	K	1
KWZQ43	4	2	H	K	J	1
L7LECB	4	2	H	K	J	1
LMQRWD	4	2	H	K	J	1
LN2J39	4	2	H	K	J	1
LPBQ2V	4	2	H	K	J	1
LPHNK8	4	2	H	K	J	1
LPW4P9	4	2	H	K	J	1
LR3PFT	4	2	H	K	J	1
LR6ADU	4	2	H	K	J	1
LUNB9G	4	2	H	K	J	1

TABLE 1

	Recovered Characters					
WebCode	Character 1	Character 2	Character 3	Character 4	Character 5	Character 6
LWBCQA	4	2	H	K	J	1
LX99NK	4	2	H	K	J	1
LY2B69	4	2	H	K	J	1
M4TVWV	4	2	H	K	J	1
M66QG2	4	2	H	K	J	1
MAH9XH	4	2	H	K	J	1
MHVKQA	4	2	H	K	J	1
MM96XV	4	2	H	K	J	1
MWDCDV	4	2	H	K	J	1
MYVG2T	4	2	H	K	J	1
N3WP4G	A/4	7	H	K	J	1
N64Z27	?	?	?	K	?	1
N7AMB6	4	2	H	K	J	1
NAUAC6	4	2	H	K	J	1
NBMFDG	(4)	2	(H)	K	(J)	(1)
NFCB6G	4	2	H	K	J	1
NFYDXW	4	2	H	K	J	1
NHRXAW	4	2	H	K	J	1
NL9KM2	4	2	H	K	*	1
NNRLHM	4	2	H	J	K	1
NP9VGF	4	2	H	K	J	1
NQZR7A	4	2	H	K	J	1
NT87DF	4	2	H	K	J	1
NUJJGC	4	2	H	K	J	1
NUJTZW	4	2	H	K	J	1
NXJ4WV	4	2	H	K	J	1
NZCN9V	4	2	H	K	J	1
P2YPRN	4	2	H	K	J	1
P476XU	4	2	H	K	J	1
P6HQLB	4	2	H	K	J	1
P9GAD2	4	2	H	K	J	1
PB2B9M	4	2	H	K	J	1
PGRCY2	4	2	H	K	J	1
PKCDUN	4	2	H	K	J	1

TABLE 1

	Recovered Characters					
WebCode	Character 1	Character 2	Character 3	Character 4	Character 5	Character 6
PVR883	4	2	H	K	J	1
PY66EP	4	2	H	K	U	1
PZMWNA	4	2	H	K	J	1
Q2CKLV	?	?	?	?	?	?
Q4YL6N	4	2	H	K	J	1
Q7K9XB	4	2	H	K	J	1
Q9C8BA	4	2	H	K	J	1
QW2M3E	4	2	H	K	J	1
QYKNX2	4	2	H	K	J	1
QYRLGD	4	2	H	K	J	1
QZ4LD8	4	2	H	K	J	1
R28PFU	4	2	H	K	J	1
R3KJTA	4	2	H	K	J	1
R7LD3C						
RAKPXC	4	2	H	K	J	1
RC6QTX	4	2	H	K	J	1
RCPGPP	4	2	H	K	J	1
RE9HKC	4	2	H	K	J	1
REELM3	4	2	H	K	J	1
RG7K22	4	2	H	K	J	1
RGYMHP	4	2	H	K	J	1
RRWK34	4	2	H	K	J	1
RUPGRX	4	2	H	K	J	1
T23PTY	4	2	H	K	J	1
T3ZX2J	4	2	H N	K	J H N	1
T7Z9WJ	4	2	H	K	J	1
TD39H7	4	2	H	K	J	1
TEU68Z	4	2	H	K	J	1
THD72M	4	2	H	K	J	1
TM3WA4	4	2	*	K	J	1
TMJZWH	4	2	H	K	J	1
TWDYV4	4	2	H	K	J	1
TWQRAJ	4	2	H	K	0	1
TYFW7W	4	2	*	K	*	1

TABLE 1

	Recovered Characters					
WebCode	Character 1	Character 2	Character 3	Character 4	Character 5	Character 6
TZBT46	4	2	H	K	J	1
U6KADU	4	2	H	K	J	1
U93GME						
U9L2U8	4	2	H	K	J	1
UNFTF9						
UQYUAU	4	2	H	K	J	1
UTQQYN	4	2	H	K	J	1
V44HPV	4	2	H	K	J	1
V4HYWG	4	2	H	K	J	1
V84LP4	4	2	H	K	J	1
V9KQDU	4	2	H	K	J	1
VBGLLV	4	2	H	K	J	1
VBNJ78	4	2	H	K	J	1
VD9JZU	4	2	H	K	J	1
VLJLLU	*	2	H	K	J	1
VLN9PU	*	?	?	K	^	1
VP6GDU	4	2	H	K	J	1
VQFF83	4	2	H	K	J	1
W28FA6	4	2	H	K	J	1
WBHQQW	4	2	H	K	J	1
WGNCP2	4	2	H	K	J	1
WJR896	4	2	H	K	J	1
WN9AJG	A	2	J	K	O	1
WNPGT6	4	2	H	K	J	1
WPGJAT	4	2	H	K	J	1
WYMFEJ	4	2	H	K	J	1
X7Y3HJ	4	2	H	K	J	1
X8CCVQ	4	2	H	K	J	1
X9TMUJ	4	2	H	K	J	1
XAKPB8	4	2	H	K	J	1
XBCNN6	4	2	H	K	J	1
XCRXPJ	4	2	H	K	J	1
XDLLBY	4	2	H	K	J	1
XECYK6	4	2	H	K	J	1

TABLE 1

Recovered Characters						
WebCode	Character 1	Character 2	Character 3	Character 4	Character 5	Character 6
XGLUEA	4	2	H	K	J	1
XHWWZ9	4	2	H	K	J	1
XJ7VAW	4	2	H	K	J	1
XMC6N9	4	2	H	K	J	1
XNLA3W	4	2	H	K	J	1
XPW7JU	4	2	H	K	J	1
XU88QJ	4	2	H	K	J	1
XVLT37	(4)	2	H	K	(J)	1
XWUV3J	4	2	H	K	J	1
XXR9L7	1	2	H	K	*	1
Y687TP	4	2	H	K	J	1
YGXZ3X	4	2	H	K	J	1
YH6FA4	4	2	H	K	J	1
YWTHRW	4	2	H	K	J	1
Z2JEUR	4	2	H	K	J	1
ZB8VX2	4	2	H	K	J	1
ZCZXEN	4	2	H	K	J	1
ZERWTM	4	2	*	K	J	1
ZH8HMF	4	?	H	K	J	1
ZKYECA				K		1
ZT8972	4	2	H	K	J	1
ZVY6VV	4	2	H	K	J	1
ZXH7QH	4	2	H	K	J	1
ZYECJV	4	2	H	K	J	1

Response Summary						Participants: 294
	Character 1	Character 2	Character 3	Character 4	Character 5	Character 6
	4	**2**	**H**	**K**	**J**	**1**
Total	274	276	266	284	268	286
Percent	93.2%	93.9%	90.5%	96.6%	91.2%	97.3%

Totals may differ, if a participant did not report a response or if a response was reported other than the consensus.

Conclusions

TABLE 2

WebCode	Conclusions
27BQH2	Visual examination and chemical treatment of the serial number area on the steel bar stock, Item 1A, reveal the following number: 42HKJ1.
2BRY72	Standard restoration techniques were applied to Item 1. The following characters were restored: 42HKJ1.
2DBZZM	The following serial number: 4 2 H K J 1 was recovered and read out as the result of examination of the item designated as Item 1.
2E7TJD	The restoration was ceased at 6:12 minutes. The serial was fully restored to read 42HKJ1.
2FXP98	The obliterated serial number was chemically processed and restored to read "42HKJ1".
2J2NJZ	The serial number was restored to read 42HKJ1.
2LKPDL	RESULTS: Examination of Item 1 revealed the presence of a defaced area. Item 1 was physically, chemically, and magnetically processed. The serial number was partially restored as: ?2HK?1 (4) (0). REMARKS: A question mark denotes the position of an unknown character and may have possible character choice(s) listed below. [Participant submitted data in a format that could not be reproduced in this report].
2PKZAL	Attempts to physically restore the obliterated serial number of the piece of bar stock, Laboratory Item 1, were successful. The restored serial number is 42HKJ1.
2RUV4Q	The serial number on Item 1 was examined microscopically, magnetically processed and chemically restored to read 42HKJ1.
2TLUHP	Lab Item 1 was examined and the area of the serial number, the center of the bar, was observed to be obliterated by polishing. Using standard chemical restoration techniques, the serial number was restored and was determined to be 4 2 N/H K J 1.
2UDWYD	The serial number on item 1 was restored to read: 4 2 H K J 1.
2W6VDB	Through physical and chemical processing, the obliterated serial number was fully restored to read '42HKJ1'.
2W8GBC	The alphanumeric characters on Item 1 were chemically restored as "42HKJ1".
2XFNFQ	The obliterated number on Item 1 was polished, magnetically treated, and chemically restored to reveal the serial number 42HKJ1.
2Y72PV	The serial number on the piece of steel bar stock (Exhibit 01) was mechanically and chemically treated and restored to read 42HKJ1. No analysis was performed on the metal bar stock standard (Exhibit 02).
2YQH6Y	The analysis of the section of Metal Bar Stock (Q1) was conducted on 4/15/2024. The Metal Bar Stock was visually analyzed. After polishing, magnetic processing, and chemical etching methods, the serial number was restored to read: 42HKJ1.
2YYKA4	THE BAR STOCK (ITEM #1) WAS CHEMICALLY/MAGNETICALLY PROCESSED. ITS SERIAL NUMBER WAS RESTORED TO READ: 42HKJ1.
39T9CR	Item 1: A piece of cold rolled steel bar stock with suspected obliterated serial number. Using chemical and physical serial number restoration techniques, an attempt was made to restore the obliterated serial number with the following results: Serial Number: 4 2 H K J 1 was restored on Item 1.
3AJLMX	Item #1-1 was submitted with a defaced serial number. Magnetic restoration and chemical etching techniques were used to restore the serial number. The serial number was restored and found to be: 42HKJ1.
3DPZJ4	Standard magnetic and chemical restoration techniques revealed the following characters: "42HKJ1". Multiple factors could have had an effect on the interpretation of restored characters.

TABLE 2

WebCode	Conclusions
3PJDGE	The obliterated serial number of item 1 was examined using magnetic particle inspection, chemically processed, partially restored, and determined to be 42*KJ1 where * represents a partially restored character which was determined to be either an H or an N.
3RNT2Y	The item 1.1 defaced piece of metal was examined and serial number restoration was performed. The serial number 42HKJ1 was restored.
3UTFJA	The erased serial number on the item was restored as 42HKJ1.
3V3NNN	The restoration revealed the following characters: 4 2 H K J 1
3V67UZ	Examination of Item 1 revealed an obliterated area. Standard chemical restoration techniques were applied to Item 1 and revealed the following characters: "42?KJ1". The third character may be "H". Multiple factors could have had an effect on the interpretation of the restored characters.
4338LD	We used our usual chemical processes to restore the erased serial number. This restoration attempt was unsuccessful.
4K46TF	As a result of the magnetic particle restoration process that the alphanumeric characters 4 2 H K 0 1 were visualised.
4KHR43	The serial number of Item 1 was restored to read 42HKJ1.
4MM7M2	The serial number on Item 1 was restored to read 42HKJ1 using magnetic particle inspection.
4N2TYN	The cold rolled steel bar showed alteration, therefore the restoration process was applied and the sequence restored was "42HKJ1". The characteristics restored through this process are not permanently recovered and wear persists on the surface.(*)
4ZH7RQ	[No Conclusions Reported.]
647M7N	After application of the electromagnetic and chemical process, I determined the serial number of the sample possibly as 42HKJ1.
6JQVF9	I undertook a chemical etching serial number restoration process and the serial number characters were identified to be 42HKJ1.
6K2UC3	Item 1 was examined and found to exhibit an area of obliteration. The obliterated area was processed using magnetic particle inspection. This technique revealed the following series of characters: 42HKJ1.
6RFTVF	[No Conclusions Reported.]
6U9C8F	An obliterated area was found on the center of Item 1. Standard serial number restoration techniques were used to reveal the following characters 4**KJ1. The first * is representative of the characters 8 or 2. The second * is representative of the characters H or N.
6XMAF3	The cold rolled steel bar stock (Item 1) was submitted with an obliterated serial number that was unable to be restored.
724UZW	Examination of Item 1 revealed an obliterated area on the face (side bearing a directional arrow). Standard chemical restoration techniques revealed the following characters: "42HKJ1" Multiple factors could have had an effect on the interpretation of the restored characters.
73QMLY	The serial number on Item 1 was restored to read 42HKJ1 using chemical etching techniques.
73VQNQ	The obliterated serial number on the bar, item 1, was restored to 42HKJ1.
74BCXR	Serial number restoration techniques were applied to Item 1 (Steel bar stock). The serial number was determined to be 42HKJ1.
77FRJC	[No Conclusions Reported.]
78QKLR	The steel bar stock was physically and chemically processed. Its serial number was restored to read: 42HKJ1.
79GWWX	Serial number restoration was performed on item 1.1. The serial number 42HKJ1 was restored on item 1.1.

TABLE 2

WebCode	Conclusions
7EMQQT	Through chemical means the obliterated serial number on the steel bar stock in Item #1 was completely restored and found to be 4 2 H K J 1.
7FLMN4	The obliterated serial number was chemically processed and restored to read 42MKJ1
7H6NHP	[No Conclusions Reported.]
7JYMKU	The serial number on item 1 was obliterated on the steel bar stock. The obliterated area was cleaned, visually examined with Magnetic Particle Inspection, polished, and chemically etched. The number 42HKJ1 was recovered. All images were acquired into Laboratory's Information Management System (LIMS).
7VEGX9	The serial number had been erased. I restored it to read 42HKJ1.
7X7DM3	The obliterated serial number located on the Exhibit 1 metal plate was processed. The characters were concluded to be "42HKJ1".
7ZPEHN	[No Conclusions Reported.]
822JJJ	The serial number on the metal bar, item 1, was restored to read 42HKJ1.
83CFZH	It was observed that the piece of metal was altered and its serial was obliterated. Through the process restoration it was recovered the serial 42HKJ1.
84LKD7	The obliterated characters on the steel bar stock were revealed to be 42HKJ1.
8CKZCQ	Standard laboratory procedures for restoring characters stamped in metal were performed on the machined area of this piece of metal. The serial number is "42HKJ1".
8L8YZB	The serial number on the bar stock (Item 1) is 42HKJ1.
8QG337	[No Conclusions Reported.]
8XV8CH	I found filing marks on the metal plate 'Item1'. Upon electrochemical treatment on filed surface, the number '42HKJ1' was restored. Therefore, I am of the opinion that the obliterated serial number is '42HKJ1'.
8YRE7V	Examination of Item 1 revealed an obliterated area. Standard restoration techniques applied to the obliterated area revealed the following characters: "42HKJ1" Multiple factors could have had an effect on the interpretation of the restored characters.
9AL6EF	Upon completion of polishing and chemical etching of the obliterated portion of the piece of cold rolled steel bar stock, item 1, I determined that the serial number consists of the following six (6) alphanumeric characters, 42HKJ1.
9CVZ7Z	Items 001.001: A piece of cold rolled steel bar stock with suspected obliterated serial number. Analysis Result: The characters 4 2 H K J 1 were restored on the bar stock.
9URPZ9	Item 1 was a piece of cold rolled steel bar stock. In the centre of one side of the bar was a recessed area that exhibited grinding to the metal surface. This area was subjected to a chemical restoration technique for the purpose of recovering any characters/numbers that may have been previously stamped into the metal. As a result of the examination, a recovery of the characters/numbers "42HKJ1" was obtained. I am of the opinion that the characters/numbers "42HKJ1" had previously been stamped into the metal surface of Item 1 and subsequently ground away.
A3JM4M	Serial number restoration techniques were applied to Item #1A. The partially restored serial number was determined to be 42*KJ1. The asterisk represents either an "H" or "N".
AAXF86	The serial number of item 1 was restored to read "42HKJ1".

TABLE 2

WebCode	Conclusions
ACRZJ6	1. Examination of Exhibit 1 revealed one ferromagnetic metal bar stock with an obliterated area approximately at it center. Standard restoration techniques were conducted, the obliterated area was restored, and the following characters were observed: 4 2 H K J 1. 2. Exhibit 1 measures: 63.91mm long, 25.45mm wide, and 6.33mm thick. All measurements are approximate. TECNICAL 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 restoration techniques. These characters are not considered absolute to the exclusion of other possible characters with similar shape and form.
AD6NKW	The serial number on Item 1 was restored to read 42HKJ1.
AEBZDQ	The hypothesis that the serial number is 4 2 H K J 1 is very strongly supported.
AEENV6	Item 1's serial number was restored to read 42HKJ1.
ATX7N9	The original scratched number was detected as 42HKJ1.
AV6E3K	The serial number of Item 1 as restored is 42HKJ1.
AWVRDQ	Restoration of obliterated stamped marking was performed on the questioned surface of the Item 1, and the restored serial number was found to be “4 2 H K J 1”.
B27BZP	The serial number was restored to read 42HKJ1.
B7MHNP	Examination of the submitted cold rolled bar stock found the manufacturer’s serial number to have been obliterated. The obliterated, original serial number was restored to read “42HKJ1”.
B97JHC	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: 42HKJ1.
B9MZBJ	Chemically and magnetically restored to read 42HKJ1.
BB7RML	The item 1A serial number was restored. It is 42HKJ1. Item 1B was used for reference purposes only.
BBVYWD	1) The obliterated characters on the metal bar (Exhibit 1) were restored to: 42HK@1. the @ was: J or 0 (zero)
BLB3TB	The serial number on the frame of Item 1 was determined to be "42HKJ1".
BM79MN	Submission 001-1 was examined and found to have an obliterated serial number. Submission 001-1 was polished with a Dremel tool. Magnetic processing was not completely effective in restoring the serial number. Chemical etchants were applied to the polished surface in an effort to restore the serial number. The serial number was restored to read 42HKJ1.
BVXZKG	The serial number of the piece metal identified item 1 is 42HKJ1.
BYHNKG	The Item 1 steel bar was chemically processed in an attempt to restore the obliterated serial number and the result is that the serial number was restored to read "42HKJ1". The restored serial number was not searched in any databases.
C4B3R4	Chemical etchants were applied to the area of obliteration, resulting in the sequence: 42-KJ1 being restored. The 3rd digit appeared to be a "P", however an "R" could not be discounted due to the similarity in letter shape.
C7FQ9E	Results, Opinions, and Interpretations: The piece of steel was examined and determined to have a serial number which had been obliterated by grinding. Using standard chemical restoration techniques, the serial number was restored and determined to be 42HKJ1
CB6G7A	‘After an attempt to chemically restore the erased serial number on the block submitted, the following serial number was recovered, 42HK01’.
CC4D4J	The submitted metal bar from Item 1 was examined and it was determined the top of the bar had been obliterated. Attempts to restore this area were made using magnetic and chemical restoration methods. The serial number on the bar from Item 1 was restored and determined to be: 4 2 H K J 1

TABLE 2

WebCode	Conclusions
CGB2EZ	1. Examination of the ferromagnetic metal bar in Exhibit 1 revealed the following. a. The metal bar measures 64.74mm long, 25.30mm wide, and 6.29mm thick, with an obliterated area on one side measuring 38.13mm long, 25.30mm wide, and 0.36mm deep. b. No toolmarks suitable for comparison are present. c. The obliterated area of Exhibit 1 was restored and the following characters were observed: 4 2 H K J 1. All measurements are approximate.
CKV3AL	In my opinion having using magnetic particle restoration the original marking / serial number, before obliteration / removal consisted of, '42HKJ1'.
CKZ7CD	Examination of Item 1 revealed a possible obliterated serial number. Using standard laboratory physical and chemical restoration techniques, the obliterated serial number on Item 1 was restored to read: 4 2 H K J 1.
CLMYYF	The piece of metal identified internally in the Ballistics Unit as E1-24-1559 (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: "42HKJ1".
CNTJN2	The obliterated serial number on the metal bar (Item 1) was restored to read 4 2 H K J 1.
CQL4Z2	1. Examination of Exhibit 1 revealed one ferromagnetic metal bar measuring 64.01mm long, 25.33mm wide, and 6.26mm thick with an obliterated area in the approximate center. a. The obliterated area measures 37.98mm long, 25.33mm wide, and 5.96mm thick and displayed no suitable toolmarks. b. The obliterated area of Exhibit 1 was restored and the following characters were observed: 4 2 H K J 1. Please note all measurements are approximate.
CT76VM	I found filing marks on the steel bar 'Item 1'. Upon electrochemical treatment on the filed surface, the number '42HKJ1' was restored. Therefore, I am of the opinion that the obliterated serial number is '42HKJ1'.
CX3TCU	A serial number restoration was attempted using magnetic particle inspection and chemical etching techniques on Item 1. The characters were observed as 4 2 ? K J 1. The third character could be a “0” or a “D”.
DJW7PH	Items – Description/Visual Examination. Item 1: one (1) piece of cold rolled steel bar stock with 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: 4 2 H K J 1 was restored on Item 1. [Name] (Firearms and Toolmarks Examiner)
EATA7D	The obliterated serial number on Item A1-1 was restored and found to consist of six alphanumeric characters, as follows; 4-2-H-K-J-1.
ECQZ4C	The Item 1 steel bar was physically and chemically processed in an attempt to restore the obliterated serial number. The result is that the serial number was restored to read 42HKJ1. The restored serial number was not searched in any databases. The Item 2 aluminum standard bar was used for reference purposes only.
EDLKQC	The steel bar stock identified as Item 1 has an obliterated area, the restoration process was applied in this area an the alphanumeric sequence 42HKJ1 was recovered.
EFPCZC	The obliterated number has been restored by using the etch method with the acid II.
EFRWVR	The serial number was chemically restored to read, "42HKJ1".
EKNLCY	1. Examination of Exhibit 1 revealed one piece of ferromagnetic steel bar stock measuring 63.79 mm long, 25.54mm wide, and 6.20mm thick. 2. There is an obliterated area in the approximate center of the steel bar stock. 3. The following characters were observed on the obliterated area of Exhibit 1 steel bar stock: 4 2 H K J 1. 4. 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 of 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.

TABLE 2

WebCode	Conclusions
EM9L8L	The serial number could be fully restored and is 42HKJ1
EQBBYU	[Laboratory] Forensics Division – Firearms – Technician Report [Laboratory] Case #: CTS 24-5250 Report By: [Name] Examiner. Report #: 1. Examination Resulting From: Serial Number Restoration proficiency testing. Exam Start Date: 2/28/2024. Items of Evidence/Items Examined: From Proficiency Test No. SNR-1. Item 1: One piece of steel bar stock, labeled SNR1, with suspected obliterated serial number. Serial number results: Serial number for item 1 is: 42HKJ1. Results were verified on 02-28-2024. Evidence disposition: Photographs retained in Forensics Division. CTS Item(s) – Retained in Forensics Division. This report contains the conclusions, opinions, and/or interpretations of the examiner(s) named within this report. End of Report for [Laboratory] Case # 24-5250 *This report shall not be reproduced except in full without approval of the laboratory* Signature of Forensic Firearms Technician [Name]:
EY27NC	The questioned piece of metal shows surface wear; By chemical restoration, the original sequence was determined, which corresponds to the pattern characters used as comparison elements.
EY6K2D	One block of silver ferrous metal measuring 2 1/2" x 1" wide x 1/4" thick displaying a 1" x 1 1/2" area milled away. Serial number 42HKJ1 recovered with chemical etching. 24-5250A scribed on back for identification.
F3FZ2N	Item #1: 01-Piece of cold rolled bar stock with defaced serial number 24-059H1. Serial Number Restoration: A chemical (Fry's Reagent) restoration procedure was conducted on the above described evidence (item #1) on 03/06/2024 with the following results: The serial number was restored to read: 42HKJ1.
F6D3HE	The serial number was recovered to read 42HKJ1.
FC6NYC	Alphanumerics sequence "42HKJ1" was restored in the disturbe area of the object identified as 2024-1553.
FECWC3	Using magnetic restoration techniques, the serial number was visible and is probably "211K01".
FG36B7	Item 1 was visually examined and processed using polishing, magnetic particle inspection, and chemical restoration methods. The serial number was restored to read 42HKJ1.
FHV2ZZ	The serial number on Item SNR1 Item 1 was restored to be either 4 8 H K J 1, 4 8 N K J 1, 4 2 H K J 1, or 4 2 N K J 1.
FK38L2	Exam Commenced: 2005hrs 25/3/2024. Exam Completed: 2050hrs 25/3/2024. Restoration Successful. Number 42HKJ1 recovered.
FK7U4F	The Exhibit's surface was lightly polished, using grinding paper 600. The polished surface was then treated with Fry's reagent. The results were successfully photographed.
FMPVX2	The serial number revealed with an acid etching process is : 42HKJ1
FQ9ZFW	Six characters were chemically recovered and in my opinion, these characters presented as '4 2 H K J 1'
FVKXZD	It is observed that the metal piece showed wear and/or alteration in areas where the manufacturer normally prints an alphanumeric sequence, which could be recovered by the developing process. After applying the developing process, it was possible to reveal the sequence 42HKJ1. It should be noted that the features revealed by this process are not permanently recovered and the wear persists on the surface. (*)
FZWY83	Positive. The restored serial number was: 42HKJ1
GDGTZ8	The obliterated serial number on the piece of steel (Exhibit 1) was fully restored to read 42HKJ1.
GHAMA2	The scratched number was detected as 42HKJ1.
GKEF2F	The serial number of Item 1 was restored and determined to be the following: 4 2 H K J 1.

TABLE 2

WebCode	Conclusions
GKJRPB	The serial number is obliterated. Chemical and physical restoration techniques resulted in a full restoration "42HKJ1".
GKLDLR	The obliterated serial number was chemically processed and restored to read: "42HKJ1"
GL8E4K	Application of chemical techniques to Item 01 revealed the following characters: 4 2 H K J 1
GM7CQ9	I found filing marks on the plate 'Item 1'. Upon electrochemical treatment on the filed surface, number '42HKJ1' was restored. Therefore, I am of the opinion that the obliterated serial number is '42HKJ1'.
GNYBTE	Results and Conclusions: The obliterated serial number on the steel bar stock, item 1, was restored to 42HKJ1. Evidence: Item 1: One piece of cold rolled steel bar stock with a suspected obliterated serial number. Methods and Observations: The steel bar stock, item 1, was examined noting that the serial number was obliterated by a possible grinding type of tool. Using standard restoration techniques, the area was sanded and treated with chemicals and magnetic inspection particles. Remarks: This report contains the opinions and interpretations of the analyst whose signature appears on the report.
GQLWL2	PROCESSED: After a visual inspection, the area where the serial number had been removed was determined to be magnetic. The area was treated with Magnetic Particle Inspection prior to being subjected to sanding with hand sanding/polishing with varying grades of wet/dry sandpaper. The area was then treated with -Turner's Solution, -Davis' Solution, -Fry's Solution. Photographs were taken during the processing. RESULTS: Positive. The recovered serial number was: 42HKJ1 *Note: It is the responsibility of the case agent to research the restored serial number and enter the restored serial number in the Property Evidence Tracking System (P.E.T.S.).
GTCVZZ	A chemical etching process was used to restore a serial number which was identified as being 42HKJ1.
GU6XFN	The serial number on Item 1 was determined to be 42HKJ1.
GVFQJ3	Using standard serial number restoration techniques, Item 1 serial number was restored to be "42*KJ1". The "*" could be either an "H" or an "N".
GVWWUL	The serial number, located on the bar stock, appeared to have been deliberately obliterated. I used magnetic particle inspection and chemical etching techniques to restore the serial number to 42HKJ1.
H3EVQD	The serial number on the steel bar stock submitted as Item 1 was restored and determined to be 42HKJ1.
H3YC7F	The defaced serial number of Item 1 was physically, magnetically and chemically processed to read: "4 2 H K J 1".
HEEC4M	The area associated with the serial number obliterated was treated with mechanical and chemical techniques, which fully restored the serial number as 42HKJ1.
HEP7FN	The number on Item 1 was restored to read "42HKJ1".
HT88ME	Examination and restoration of the obliterated area on Item 1 (a piece of cold rolled steel bar stock with a suspected obliterated serial number) revealed the following characters interpreted as "42HKJ1".
HW7JJE	The obliterated serial number was partially restored to read ??HKJ1. The ? represents an un-restored character.
HZ8DRG	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 "42HKJ1".
J2FYR3	Chemical restoration techniques resulted in a partial restoration to "42?KJ1" with the 3rd character a possible N or H.
J7NHQV	The serial number of the steel bar, Exhibit ITEM 1, was restored and observed to be "42HKJ1".
J9KNK9	The serial number on the metal bar, item 1, was restored to read 42HKJ1.
JDREME	The serial number of the bar stock section Item 1 was restored to read 4 2 H K J 1 using magnetic particle inspection and chemical etching techniques. The bar stock section Item 1.1 was visually inspected.

TABLE 2

WebCode	Conclusions
JFBFHZ	The erased serial number is perceived to be 42HKJ1
JKBHRV	The serial number was erased. I was able to restore the serial number which read 42HKJ1.
JL4EGP	The obliterated serial number located on the Exhibit 1 piece of steel bar stock was processed. The characters were concluded to be 42HKJ1.
JLKPWA	Visual examination and chemical treatment restored the obliterated serial number on Item 1 to read "42HKJ1." Item 1 was referred to ATF for a Firearms Trace and checked for stolen through [Database], a computer search that resulted in a return that indicated "No Record" for this make, model and caliber. Item 1A was inventoried. All items of evidence are being returned.
JM2MPA	The obliterated number on Item 1 was chemically restored to reveal the serial number 42HKJ1.
JMVJMH	The serial number on the "steel bar stock" was restored to read 4 2 H K J 1 using magnetic particle inspection and chemical etching techniques.
JPMFCC	The serial number of Item 1 was fully restored to read 42HKJ1.
JQZXK9	The obliterated serial number on Item 1 was polished and chemically restored to reveal the serial number 42HKJ1.
JRQBVE	The serial number on the metal bar stock (Exhibit 1) was mechanically and chemically treated and restored to read 42HKJ1. No serial number restoration was performed on the metal bar stock standard (Exhibit 2).
JT36G7	Magnetic Particle Inspection and Chemical Restoration techniques resulted in a full restoration of the obliterated Characters.
K4KWPG	Further examination of the submitted barstock found that the serial # was obliterated. Physical, magnetic and chemical processing restored the serial # to read 42HKJ1.
K8JBAK	The obliterated number on Item 1 was restored to read 42HKJ1.
KBZJXK	The obliterated serial number of Item 01 (bar stock) was chemically restored and determined to be 42HKJ1.
KEJKT7	Interpretation: The alphanumeric sequence of the piece of metal was determined to be altered. After the analysis, a sequence consistent with the characteristics evaluated in the comparative material was revealed. The detected alteration may still be perceptible after the analyzes carried out. In summary: The piece of metal analyzed is completely identified despite the alterations detected.
KHHXFW	Examinations to recover the serial number on Item 1 using two types of horseshoe magnets and both the red and the grey Magnaflux were unsuccessful. Examinations to recover the serial number using the electric yoke magnet and the red and grey Magnaflux were unsuccessful. Examinations to recover the serial number on Item 1 using chemical etching techniques were unsuccessful. Examinations to recover the serial number on Item 1 using electrolytic chemical etching techniques were also unsuccessful. Examinations showed at the conclusion of the above spectrum of tests, there were no signs of obliterated characters on Item 1.
KKNNGJ	I examined and processed Item 1 (LIMS 002), and I determined the obliterated serial number to be 42HKJ1.
KR6YW7	The obliterated serial number was restored and read as '42HKJ1'.
KWF8WB	Destructive method using fry's reagent was used. firstly, Dremel tool was used to smoothen the surface and was then cleaned with Acetone. after that fry's reagent was used multiple times to restore the serial number.
KWZQ43	Attempts to physically and chemically restore the obliterated serial number of the piece of metal, Laboratory Item 1, were successful. The restored serial number is 42HKJ1.
L7LECB	The serial number on the metal plate (Exhibit 01) was mechanically and chemically treated and restored to read 42HKJ1. The stamped metal plate (Exhibit 02) was documented and photographed; however, no further analysis was performed.

TABLE 2

WebCode	Conclusions
LMQRWD	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 "42HKJ1".
LN2J39	The restoration revealed the following characters: 4 2 H K J 1
LPBQ2V	We proceed to reveal the serial number by polishing the surface using the micro polishing system device with the abrasive disc P4000. Then we prolonged applications of appropriate solutions : aqua regia (HNO3 +3HCl) and after another solution : Cucl2
LPHNK8	Visual examination with chemical processing of the steel bar stock (Item 1) revealed the obliterated serial number to read: 42HKJ1. Evidence examined for this report will be returned to the [Laboratory] Quality Assurance Coordinator.
LPW4P9	The obliterated serial number was fully restored to read 4 2 H K J 1 using sand paper, Fry's reagent, and photography.
LR3PFT	after the restoration. the obliterated serial number is: 42HKJ1
LR6ADU	The suspected obliterated serial number was restored to read 42HKJ1
LUNB9G	A serial number restoration was attempted on Item 1 using magnetic particle inspection and was unsuccessful. The serial number on Item 1 was restored to read 42HKJ1 using chemical etching techniques.
LWBCQA	The obliterated serial number was restored and can be read as: 42HKJ1
LX99NK	Item 1 was chemically processed for the presence of an obliterated serial number. The fully developed number reads 4 2 H K J 1.
LY2B69	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 "42HKJ1".
M4TVWV	The submitted piece of cold rolled steel bar stock, Item 1, was examined and observed to have an obliterated serial number on its front face. The serial number was restored to: 4 2 H K J 1
M66QG2	The Item 1 steel bar stock was magnetically and chemically processed and the obliterated serial number was determined to be "42HKJ1".
MAH9XH	The obliterated serial number, located on the front side of the bar stock, was processed. The characters were concluded to be "42HKJ1".
MHVKQA	Serial number restoration techniques were applied to Item 1A (metal bar stock). The serial number was determined to be 42HKJ1.
MM96XV	The serial number on the steel bar was restored to read: 42HKJ1
MWDCDV	Serial Number Restoration Analysis: Methodology: Physical (Visual Examination). Microscopy (Comparison Microscope). Chemical (Reagent Etching). Magnetic Particle Inspection. Serial number restoration procedures revealed the serial number on Item 1, the steel bar stock, to be: 4 2 H K J 1.
MYVG2T	The serial number on Item 1 was restored to 42HKJ1.
N3WP4G	The serial number on the metal bar was partially restored to read ?7HKJ1 using magnetic particle inspection and chemical etching techniques. The first character could be either an "A" or a "4"
N64Z27	Due to the depth of the grinding we do not success to restore all the markings. We partially succeed to restore the serial number as: ? ? ? K ? 1
N7AMB6	For the Piece of metal without visible inscriptions, it has an arrow indicating the orientation of the piece. received and identified internally in the Ballistics Unit as 2024-1563A (ITEM 1): It is observed that the metal piece showed wear and/or alteration in the area where the manufacturer printed the sequence, which could be recovered through the development process. After applying the development process, the 42HKJ1 sequence was revealed. It should be noted that the characteristics revealed through this process are not permanently recovered and wear persists on the surface.

TABLE 2

WebCode	Conclusions
NAUAC6	Magnetic particle inspection and chemical restoration methods resulted in a full restoration "42HKJ1".
NBMFDG	Visual examination of this item revealed the presence of grind marks on the center of the steel bar. This area was magnetically processed and etched with acid solutions and the following was restored: (4) 2 (H) K (J) (1) ( ) indicates a possible character due to an incomplete restoration.
NFCB6G	Bar Stock (Item #1) was chemically/magnetically processed. It's serial number was restored to read 42HKJ1.
NFYDXW	The serial number on Property Item SNR1 was restored to read 42HKJ1 using chemical etching techniques.
NHRXAW	The serial number was recovered using physical and chemical techniques. The complete original serial number is “4 2 H K J 1”.
NL9KM2	Using standard laboratory physical and chemical restoration techniques, the obliterated serial number was partially restored to read "42HK*1." The fifth digit could be a J or a 9.
NNRLHM	The obliterated number on Item #1 was polished and chemically restored to reveal the serial number 42HKJ1.
NP9VGF	The obliterated serial number on the piece of bar stock (Item 1) was magnetically processed and chemically restored to read “42HKJ1”.
NQZR7A	REFERENCE: This report references performance monitoring test 24-5250 which was administered by [Name] and due on April 29, 2024. EVIDENCE: Exhibit #: Description 1: One piece of bar stock with an obliterated serial number and one aluminum standard. RESULTS: MISCELLANEOUS: Item 1: The serial number on the bar stock was restored to read 42HKJ1 using chemical etching techniques and magnetic particle inspection. The aluminum standard was used for reference during analysis.
NT87DF	The obliterated serial number of Item 1 was restored to read 42HKJ1.
NUJJGC	Mechanical and Chemical processing of the submitted bar stock revealed that the original serial number is 42HKJ1.
NUJTZW	[No Conclusions Reported.]
NXJ4WV	Examination and chemical processing of Item 1 restored the obliterated serial number, which was determined to be "42HKJ1".
NZCN9V	Serial Number Restoration Analysis: Methodology: Physical (Visual Examination). Microscopy (Comparison Microscope). MPI- Magnetic Particle Inspection/MagnaFlux. Serial number restoration procedures revealed the serial number on Item 1, the bar stock, to be: 4 2 H K J 1.
P2YPRN	I undertook a chemical etching serial number restoration process and the serial number characters were identified to be 42HKJ1
P476XU	The obliterated area on item 1 was physically and chemically restored to read: 4 2 H K J 1. An aluminum block with numeric and alpha characters was received and used as a reference standard.
P6HQLB	The section of metal bar stock Q1 (Item 1) was visually analyzed and through polishing, magnetic and chemical processes was fully restored to read 42HKJ1. This report contains examination results that relate only to the items tested and conclusions based on the interpretations/opinions of this author. Work performed began on 04/17/2024.
P9GAD2	Serial number restoration techniques were utilized on laboratory exhibit 1 and the following number was developed: 42HKJ1
PB2B9M	All the six characters of the serial number were fully restored.
PGRCY2	The obliterated serial number on the Item 1 steel bar stock was restored to read 42HKJ1 by using the chemical etching and Magnaflux methods.
PKCDUN	Based on my finding, I am of the opinion that the steel bar was tempered with filing and after electrochemical restoration process, the serial number was restored and read as 42HKJ1.

TABLE 2

WebCode	Conclusions
PVR883	The restoration procedure was applied to the cold rolled steel bar stock and the alphanumeric sequence 42HKJ1 was obtained.
PY66EP	The obliterated serial number on the piece of stainless steel bar stock, Item 1 was restored to read 4 2 H K U 1.
PZMWNA	The serial number on the piece of steel bar stock (Exhibit 01) was mechanically and chemically treated and restored to read 42HKJ1. No analysis was performed on the aluminum bar stock standard (Exhibit 02).
Q2CKLV	A serial number restoration was attempted using chemical etching techniques and magnetic particle inspection on Property Item SNR1 and was unsuccessful.
Q4YL6N	The obliterated serial number was chemically processed and restored to " 42HKJ1 ".
Q7K9XB	The serial number on Item 1 was restored to read 4 2 H K J 1 using magnetic particle inspection and chemical etching techniques.
Q9C8BA	The examination of the submitted sample of a metal piece with a removed six-digit stamped serial number was carried out by two separate methods. Firstly the sample was tested and observed with a magneto optical device to visualize the removed serial number without destruction. Secondly an etching procedure using the acid solution "Fyr" was carried out. By both processes the number/letter combination "42HKJ1" could be made visible.
QW2M3E	The obliterated serial number located on the Exhibit 1 bar stock was processed. The characters were concluded to be 42HKJ1. No Firearms or Toolmark examinations were requested or conducted on Exhibit 2.
QYKNX2	MPI
QYRLGD	Visual examination and chemical treatment of the serial number area on the center of the bar stock, Item 1A, reveal the following number: 42HKJ1.
QZ4LD8	Standard laboratory procedures for restoring characters stamped in metal have been employed on the obliterated area of this metal bar. The restored characters were determined to be "42HKJ1".
R28PFU	The serial number was restored to read 42HKJ1.
R3KJTA	A serial number restoration was attempted on the item using chemical etching techniques. The serial number was restored to read 42HKJ1.
R7LD3C	1. Exhibit 1 is a piece of metal barstock with the serial number removed and an aluminum standard. a. Restoration techniques on the obliterated area of the Exhibit 1 barstock did not reveal the presence of legible characters.
RAKPXC	1. Exhibit 1 contains a metal block with an obliterated area. a. The obliterated area on Exhibit 1 was restored and the following characters were observed: 4 2 H K J 1.
RC6QTX	On the examination, I found that there were filing mark on the steel bar stock "Item 1" that bearing no alphanumerics. On electrochemical treatment, a set of alphanumerics read as "42HKJ1" was restored. Hence, I am of the opinion that, the number of the steel bar stock "Item 1" was tempered and restored and read as "42HKJ1".
RCPGPP	The serial number on the steel bar stock, item 1, was observed to have been obliterated. Polishing, magnetic particle inspection, and chemical etching techniques were used to restore the obliterated serial number to"4 2 H K J 1."
RE9HKC	The recovery techniques applied, has allowed us to obtain the previously obliterated sequence "4 2 H K J 1"
REELM3	the restored serial number is 42HKJ1
RG7K22	The serial number of Item 001 was mechanically, magnetically, and chemically processed and restored to read “42HKJ1”. This is also the opinion of Firearms Examiner [Name].

TABLE 2

WebCode	Conclusions
RGYMHP	Examination and chemical processing of Item 1 restored obliterated serial number, which was determined to be "42HKJ1".
RRWK34	The obliterated serial number could be restored and reads : 42HKJ1
RUPGRX	I found deep filing marks on a piece of cold rolled steel bar stock (Item 1). Upon electrochemical treatment on the filed surface, I recover a new number to read as '42HKJ1'. 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 is 42HKJ1.
T23PTY	the restoration procedure was applied to the cold rolled steel bar stock and the alphanumeric sequence 42HKJ1 was obtained
T3ZX2J	Examination and restoration of the obliterated area on Item 1 revealed a six-character serial number. 1st character: 4 2nd character: 2 3rd character: H or N 4th character: K 5th character: J, H, or N 6th character: 1
T7Z9WJ	Upon electrochemical treatment on the filed surface,the number 42HKJ1 was restored. Based on my findings, i am of the opinion that 42HKJ1 was the original number stamped on the surface that was subsequently obliterated.
TD39H7	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 "42HKJ1".
TEU68Z	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: 42HKJ1.
THD72M	Using chemical etching techniques, the serial number was restored to read 42HKJ1.
TM3WA4	Serial number restoration techniques were applied to Item 1A (bar stock). The partially restored serial number was determined to be 4 2 * K J 1. The asterisk represents an unrestored character.
TMJZWH	1. (Serial Number Restoration) The Serial Number on the "Aluminum Standard" was defaced by an abrasive method. The serial number was restored using the chemical etching method. "Aluminum Standard" was marked with the [Lab] number for identification
TWDYV4	Serial number restoration techniques were applied to Item 2A. The serial number was determined to be 42HKJ1.
TWQRAJ	1. Examination of Exhibit 1 revealed one ferromagnetic metal bar with an obliterated area. a. The obliterated area of Exhibit 1 was restored and the following characters were observed: 4 2 H K 0 1
TYFW7W	Using standard laboratory physical and chemical restoration techniques, the obliterated serial number on Item 1 was partially restored to read: 4 2 * K * 1. The third character could be an "H" or an "N". The fifth character could be a "0" or a "J".
TZBT46	Chemical restoration was performed on the stample. Start time : 08h50 Finsh time : 09h10
U6KADU	Attempts to physically and chemically restore the obliterated serial number of the piece of metal, Laboratory Item 1, were successful. The restored serial number is 42HKJ1.
U93GME	The Piece of cold rolled steel bar stock was processed with Magnaflux and acid etching chemicals to restore the obliterated serial number. The serial number was not able to be restored.
U9L2U8	A serial number restoration was performed on this item. Based upon the information from the Proficiency Test provider, the expected serial number configuration is 6 characters. The serial number was fully restored and appeared to be 42HKJ1.
UNFTF9	1 Attempts were made to recover the obliterated serial number on the (Item 1) utilizing chemical, magnetic and physical analysis of the serialized metallic surface area. The serial number was obliterated beyond recovery by the methods used at this laboratory.
UQYUAU	i found filing mark on a cold rolled steel bar stock (item 1). Upon electrochemical treatment on the filed surface, i recover a new set number to be read as '42HKJ1'. Based on examination and finding, I am of the opnion that the original serial number on a cold rolled steel stock (Item 1) as '42HKJ1'.

TABLE 2

WebCode	Conclusions
UTQQYN	Results of Examinations: The examination and processing of the obliterated serial number on the Item 1 bar stock was restored to read "42HKJ1".
V44HPV	The obliterated serial number was fully restored to: 4 2 H K J 1.
V4HYWG	Examination and processing of the obliterated area of this item restored the original alphanumeric characters. A Full Restoration was determined to be: 42HKJ1.
V84LP4	The section of metal bar stock Q1 (Item 1) was visually analyzed and through polishing, magnetic and chemical processes was fully restored to read 42HKJ1. This report contains examination results that relate only to the items tested and conclusions based on the interpretations/opinions of this author. Work performed began on 04/18/2024.
V9KQDU	Visual examination with mechanical and chemical processing of the piece of cold rolled steel bar stock with suspected obliterated serial number (Item 1) revealed the obliterated serial number to read: 42HKJ1. Evidence examined for this report will be returned to the [Laboratory] Quality Assurance Coordinator.
VBGLLV	The development with magnetic particles was not so clear. By using the methodology with chemical reagents, the characters revealed were much more efficient and clear.
VBNJ78	Visual examination and chemical treatment of the serial number area on the magnetic bar stock, Item 1A, reveal the following number: 4 2 H K J 1
VD9JZU	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, 42HKJ1.
VLJLLU	The obliterated serial number on the plate, item 1, was partially restored to read *2HKJ1. The * indicates a possible 4.
VLN9PU	* indicates an "A" or "4" ^ indicates a possible "J" ? indicates an unrestored character
VP6GDU	Examinations showed the serial number of Item 1.1 to be obliterated. The serial number was restored using magnetic particle restoration and chemical etching techniques and was found to be: 42HKJ1.
VQFF83	Serial number restoration techniques were applied to item #2. The serial number was determined to be 42HKJ1.
W28FA6	The serial number on Item 1 was restored to read 42HKJ1 using magnetic particle inspection.
WBHQQW	Lab Item #1 (steel bar with obliterated serial number) was examined between 03/01/2024 and 03/04/2024 and found to contain an area of obliteration with linear signatures. Serial number restoration commenced on 03/01/2024 was completed on 03/04/2024. Serial number restoration was successful. The serial number on Lab Item #1 (steel bar) was fully recovered as: 42HKJ1.
WGNCP2	The serial number on the piece of metal (Exhibit 01) was mechanically and chemically treated and restored to read 42HKJ1.
WJR896	A portion of item 001-01-A was obliterated with no visible serial number. Examination and chemical processing of the obliterated serial number on item 001-01-A was restored and determined to be "42HKJ1".
WN9AJG	[No Conclusions Reported.]
WNPGT6	The serial number was chemically restored to read: 42HKJ1.
WPGJAT	For the evidence received and identified internally in the Ballistics Unit as E1-24-1552, 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 42HKJ1. It should be noted that the features revealed by this process are not permanently recovered and wear persists on the surface.
WYMFEJ	I was able to restore the serial number to read 4 2 H K J 1

TABLE 2

WebCode	Conclusions
X7Y3HJ	The obliterated serial number on the test bar stock taken from the submitted envelope labelled Item 1 was fully restored to be 42HKJ1.
X8CCVQ	The serial number was restored to read 42HKJ1.
X9TMUJ	The item consisted of a metal block with a groove on one side. Number restoration techniques were applied to the area within the groove. A single line of characters was revealed. The line of characters was “4 2 H K J 1”.
XAKPB8	The evidence in item 1 was analyzed by physical and microscopic examination. The obliterated area on the piece of cold rolled steel bar stock in item 1 was chemically etched and the serial number was determined to be 42HKJ1.
XBCNN6	The section of metal bar stock Q1 (Item 001) was visually analyzed and through chemical processes was fully restored to read 42HKJ1. This report contains examination results that relate only to the items tested and conclusions based on the interpretations/opinions of this author. Work performed began on April 23, 2024.
XCRXPJ	The steel bar had a groove on one face. Number restoration techniques were applied to the groove. A line of characters was restored: " 4 2 H K J 1 ".
XDLLBY	Serial number restoration techniques were applied to Item 1 (bar stock). The serial number was determined to be 42HKJ1.
XECYK6	The fully obliterated alphanumerics on the front of the metal bar stock (Q1) were magnetically/chemically processed and fully restored to read "42HKJ1".
XGLUEA	The obliterated serial number was chemically processed and restored to read "42HKJ1".
XHWWZ9	The serial number of Item 1 was restored to read 42HKJ1.
XJ7VAW	A 1" x 2 1/2" bar stock submitted with a 1" x 1 1/2" section removed with a suspected serial number obliterated. Serial number restoration using chemical etching process recovered "42HKJ1".
XMC6N9	The obliterated serial number located on the Exhibit 1 bar stock was processed. The characters were concluded to be “42HKJ1”.
XNLA3W	The obliterated serial number on Item 1 was restored and interpreted as "42HKJ1".
XPW7JU	Chemically, and magnetically restored to read 42HKJ1.
XU88QJ	Observed an area on the one side of the exhibit to have apparent machining marks. A serial number restoration was attempted on this area to recover any previously stamped characters. After surface treatment of the area, I observed the following characters: 42HK1J
XVLT37	Visual examination of this item revealed the presence of grind marks on one side of the bar stock. This area was magnetically processed and etched with acid solutions, and the following was restored: (4) 2 H K (J) 1 ( ) indicates a possible character due to an incomplete restoration.
XWUV3J	Restoration of obliterated marks, using acid solution, allows to read following marks : 4 2 H K J 1
XXR9L7	The item 1 steel bar stock obliterated serial number was chemically processed, partially restored, and interpreted as “12HK*1”. The asterisk (*) represents an unrestored character, but the possibility of “4” cannot be eliminated.
Y687TP	After electrochemical analysis, I developed a new set of numbers on the surface of the steel bar to be read as “42HKJ1”. The restored number “42HKJ1" is the original serial number.
YGXZ3X	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: 42HKJ1. The item 1-1 aluminum plate was only used as reference information.
YH6FA4	The defaced serial number on the piece of metal (Item 1) was restored to read "42HKJ1".
YWTHRW	The serial number of Item 1 was fully restored to read 42HKJ1.

TABLE 2

WebCode	Conclusions
Z2JEUR	The piece of cold rolled steel bar stock is applied the procedure "Restoration of alphanumeric sequences or other impressions on firearms or similar, version 13" and the alphanumeric sequence is obtained 42HKJ1.
ZB8VX2	A serial number restoration was performed on this item. Based upon the CTS paperwork, the expected serial number configuration is six characters. The serial number was fully restored and appeared to be 42HKJ1.
ZCZXEN	The development process was carried out in the area where it was altered and it was possible to restoration the alphanumeric sequence correspondin to 42HKJ1
ZERWTM	Examination and chemical processing of [Laboratory] Item 001 partially restored the serial number. The serial number was determined to be 42*KJ1 (* is either an H or N).
ZH8HMF	The serial number had been erased. It was partially restored and read as 4_HKJ1.
ZKYECA	The Item 1 obliterated serial number, located in the mid-section of the bar, was partially restored. Two (2) characters were restored to read "K" and "1". "K" proceeds "1" with "1" appearing to be the end of the structure.
ZT8972	An obliterated area was observed on Item 1. Standard chemical restoration techniques were used on the obliterated area. The following characters were revealed: 42HKJ1 Multiple factors could have had an effect on the interpretation of the restored characters.
ZVY6VV	2024-5250 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: 4 2 H K J 1 was restored on Item 1. [Name] Firearm and Toolmark Examiner
ZXH7QH	Using chemical methods, the obliterated serial number on Item 001A was restored to read: 4 2 H K J 1. Item 001B was inventoried and not further examined.
ZYECJV	A serial number restoration was attempted on Item 1 using magnetic particle inspection and chemical etching techniques. The characters were observed as 42HKJ1.

Sample Preparation

(listed in order of use)

TABLE 3

Sample Preparation			
WebCode	**Method**	**Tool Used**	**Grit Size**
27BQH2	Sanding	Sand paper	220
2BRY72	Visual	Stereoscope	
2DBZZM	None	Microscope	
	None	Stereoscope	
2E7TJD	Polishing	Emery paper	3M734 Ultra Fine
2FXP98	Sanding	Sand paper	220 grit
2J2NJZ	Polishing	Dremel	
2LKPDL	Polishing	Dremel	
2PKZAL	Visual	Stereoscope	
2RUV4Q	Visual	Microscope	
	Sanding	Sand paper	fine
	Polishing	Rotary Tool	Cotton applicator with Jeweler's Rouge
2TLUHP	Visual	Stereoscope	
	Sanding	Sand paper	320
2UDWYD	Visual	Stereoscope	
2W6VDB	Visual		
	Polishing	Steel wool	
2W8GBC	Cleaning	Acetone	
2XFNFQ	Cleaning	Spotcheck SKC-5	
2Y72PV	Polishing	Dremel	
2YQH6Y	Polishing	Dremel	
2YYKA4	Visual	Stereomicroscope (Zeis Discovery V20)	
39T9CR	None		
3AJLMX	Cleaning	Acetone	
	Polishing	Dremel	
3DPZJ4	Visual	Stereoscope	
3PJDGE	Visual	Stereoscope	

TABLE 3

Sample Preparation			
WebCode	**Method**	**Tool Used**	**Grit Size**
3RNT2Y	None		
3UTFJA	None		
3V3NNN	Sanding	Sand paper	1000 & 2000
3V67UZ	Polishing	Dremel	
4338LD	Visual		
	Cleaning	Acetone	
	Polishing	Rotary Tool	500
4K46TF	None		Not required due to fine finish.
4KHR43	Visual	Stereoscope	
4MM7M2	Visual		
	Visual	Photographic	
	Visual	Stereoscope	
4N2TYN	Polishing	Sand paper	200, 400, 1000
4ZH7RQ	None		
647M7N	Sanding	Sand paper	1500
6JQVF9	None		
6K2UC3	None		
6RFTVF	Sanding	Sand paper	150
6U9C8F	Polishing	Dremel	
6XMAF3	Polishing	Dremel	
724UZW	Grinding	Dremel	
73QMLY	Visual	Stereoscope	
	Sanding	Sand paper	220
73VQNQ	Polishing	Sand paper	600/1500
74BCXR	Visual	Stereoscope	
77FRJC	Cleaning	Sand paper	200-300-600-1500
78QKLR	Polishing	Dremel	
79GWWX	Visual	Stereoscope	
	Polishing	Dremel	

TABLE 3

Sample Preparation			
WebCode	**Method**	**Tool Used**	**Grit Size**
7EMQQT	None		
7FLMN4	None		
7H6NHP	Cleaning	Acetone	
7JYMKU	Visual	Stereoscope	
	Polishing	Sand paper	600 grit
7VEGX9	Sanding	Emery paper	730
	None		Mild heat
7X7DM3	Visual	Stereoscope	
7ZPEHN	None		
822JJJ	Visual	Stereoscope	
83CFZH	Cleaning	Acetone	
	Sanding	Sand paper	220, 400
84LKD7	Sanding	Sand paper	P220
	Polishing	Steel wool	#00
8CKZCQ	Visual	Stereoscope	
8L8YZB	Polishing	Dremel	
8QG337	Grinding	Dremel	
	Polishing	Dremel	
8XV8CH	Cleaning	Acetone	
8YRE7V	Visual		
9AL6EF	Cleaning	Acetone	
	Visual	Stereoscope	
	Sanding	Sand paper	P600
	Visual	Stereoscope	
	Polishing	Sand paper	P400
	Cleaning	Acetone	
	Visual	Stereoscope	
9CVZ7Z	Visual	Stereoscope	
9URPZ9	Visual	Microscope	
	Sanding	Sand paper	Between 600 and 1200 grade
A3JM4M	None		

TABLE 3

Sample Preparation			
WebCode	**Method**	**Tool Used**	**Grit Size**
AAXF86	None		
ACRZJ6	Visual	Microscope	
AD6NKW	None		
AEBZDQ	None		
AEENV6	Sanding	Sand paper	fine - unknown size
ATX7N9	Cleaning	Acetone	
AV6E3K	Sanding	Sand paper	400
AWVRDQ	Sanding	Sand paper	120, 360, 800, 1500
B27BZP	None		
B7MHNP	None		
B97JHC	Polishing	Steel wool	
B9MZBJ	Polishing	Dremel	
BB7RML	Sanding	Sand paper	400
BBVYWD	Visual Polishing	light & low magnification Dremel	
BLB3TB	None		
BM79MN	Polishing	Dremel	Extra fine
BVXZKG	Sanding	Sand paper	1000
BYHNKG	None		
C4B3R4	Visual Polishing Sanding Cleaning	 Buffing wheel Emery paper	 400, 800, 1200 & 2000
C7FQ9E	Sanding	Sand paper	320 grit
CB6G7A	Sanding Polishing	Sand paper Sand paper	P1500
CC4D4J	None		
CGB2EZ	None		
CKV3AL	Cleaning	Magnaflux SKC-S cleaner	

TABLE 3

Sample Preparation			
WebCode	**Method**	**Tool Used**	**Grit Size**
CKZ7CD	Visual		
CLMYYF	Sanding	Sand paper	1000
CNTJN2	Polishing	Dremel	
CQL4Z2	None		
CT76VM	Cleaning	Acetone	
CX3TCU	Visual	Stereoscope	
DJW7PH	Polishing	Dremel	
EATA7D	Sanding Polishing	Sand paper Rotary Tool	600
ECQZ4C	Polishing	Dremel	
EDLKQC	Sanding	Sand paper	220, 400, 1000
EFPCZC	None		
EFRWVR	Visual	Stereoscope	
EKNLCY	Visual Polishing	Microscope Dremel	
EM9L8L	Grinding Polishing	Rotary Tool Rotary Tool	1200 4000
EQBBYU	Sanding Polishing Cleaning None	Sand paper Dremel H20 and paper	150
EY27NC	Sanding	Sand paper	225 and 600 grit water sandpaper was used.
EY6K2D	Polishing	Rotary Tool	
F3FZ2N	Polishing	Dremel	
F6D3HE	Sanding	Sand paper	220
FC6NYC	Sanding	Sand paper	1000
FECWC3	Sanding	Sand paper	220, 400, 600
FG36B7	None		
FHV2ZZ	Sanding	Sand paper	180, 320, 600 grits

TABLE 3

Sample Preparation			
WebCode	**Method**	**Tool Used**	**Grit Size**
FK38L2	Sanding	Sand paper	1200
FK7U4F	Sanding	Sand paper	600
FMPVX2	None		
FQ9ZFW	Polishing	Sand paper	1200
FVKXZD	Sanding Cleaning	Sand paper Acetone	400 and 1000
FZWY83	Visual		
GDGTZ8	Visual Visual	Stereoscope Microscope	
GHAMA2	Cleaning	Acetone	
GKEF2F	None		
GKJRPB	Polishing	Dremel	
GKLDLR	Sanding	Sand paper	1800
GL8E4K	None		
GM7CQ9	Cleaning	Acetone	
GNYBTE	Visual Sanding	Stereoscope Sand paper	220, 400, and 800 grit
GQLWL2	Visual Sanding	room light Sand paper	100
GTCVZZ	Visual Sanding Polishing Polishing Cleaning	Torch Sand paper Rotary Tool Acetone	 1200 Polishing wax Brasso
GU6XFN	None		
GVFQJ3	Polishing	Dremel	
GVWWUL	Visual	Stereoscope	
H3EVQD	None		
H3YC7F	Polishing	Dremel	
HEEC4M	Sanding Polishing	Sand paper Dremel	Norton 150C Very Fine/Fine Cratex

TABLE 3

Sample Preparation			
WebCode	**Method**	**Tool Used**	**Grit Size**
HEP7FN	Sanding	Sand paper	500 grit
HT88ME	Sanding	Sand paper	413Q - very lightly
HW7JJE	None		
HZ8DRG	Visual		
	Polishing	Rotary Tool	Used rotary wheel to polish/sand surface
J2FYR3	Visual	Stereoscope	
J7NHQV	Visual	No instrument used	
	Polishing	Steel wool	
	Polishing	Sand paper	1500
J9KNK9	Visual	Stereoscope	
JDREME	Visual	Stereoscope	
	Sanding	Sand paper	600
	Polishing	Sand paper	1200
JFBFHZ	Polishing	Dremel	
JKBHRV	Visual	Microscope	
	Polishing	Rotary Tool	Rubber Wheel
	Polishing	Emery paper	400 & 800 Grit
	Polishing	Wet Polish	
	Cleaning	Acetone	
JL4EGP	None		
JLKPWA	Visual		
	None		No polishing necessary
JM2MPA	None		
JMVJMH	Visual	Stereoscope	
	Visual	Microscope	
	Visual	Camera	
JPMFCC	Visual	Stereoscope	
JQZXK9	Visual	Stereoscope	
JRQBVE	Polishing	Rotary Tool	#74 Cratex Wheel
JT36G7	None		
K4KWPG	None		

TABLE 3

Sample Preparation			
WebCode	**Method**	**Tool Used**	**Grit Size**
K8JBAK	None		
KBZJXK	None		
KEJKT7	Cleaning	Acetone	
	Visual		
KHHXFW	None		
KKNNGJ	Polishing	Dremel	
KR6YW7	Visual	Physical Observation	
	Cleaning	Acetone	
KWF8WB	Polishing	Dremel	
	Polishing	Acetone	
KWZQ43	None		
L7LECB	None		
LMQRWD	Visual	Stereoscope	
	Sanding	Sand paper	600 grit
LN2J39	Visual	Stereoscope	
	Sanding	Sand paper	1000, 1500, 2000
	Polishing	Sand paper	2000 w/ WD-40
LPBQ2V	Polishing	Rotary Tool	P 4000
LPHNK8	None		
LPW4P9	Sanding	Sand paper	60, 280, 600, 1500
LR3PFT	Cleaning	Acetone	
LR6ADU	Visual	Stereoscope	
	Cleaning	Warm soapy water	
	Sanding	Emery paper	3M brand Ultra fine
LUNB9G	Visual	Stereoscope	
LWBCQA	Visual	Stereoscope	
	Polishing	Grinding wheel	
	Visual	Leeds Spectral Vision	IR and UV
LX99NK	None		
LY2B69	Cleaning	Acetone	

TABLE 3

Sample Preparation			
WebCode	**Method**	**Tool Used**	**Grit Size**
M4TVWV	Visual	Stereoscope	
	Polishing	Dremel	
M66QG2	Polishing	Dremel	
MAH9XH	None		
MHVKQA	Polishing	Dremel	
MM96XV	Visual	Stereoscope	
MWDCDV	Visual	Microscope	
MYVG2T	None		
N3WP4G	Visual	Stereoscope	
	Sanding	Sand paper	fine
N64Z27	Sanding	Rotary Tool	Grinding disc 240
N7AMB6	Sanding	Sand paper	1000
NAUAC6	Polishing	Flitz metal polish	
NBMFDG	Visual	Stereoscope	
NFCB6G	Visual	Stereomicroscope (Zeis Discovery V20))	
NFYDXW	Visual		
NHRXAW	None	Stereoscope	
NL9KM2	None		
NNRLHM	Visual		
	Polishing	Dremel	
NP9VGF	Visual		
NQZR7A	Visual	Eyes	
NT87DF	Visual	Stereoscope	
NUJJGC	None		
NUJTZW	Cleaning	Acetone	
NXJ4WV	Visual	Stereoscope	
NZCN9V	None		
P2YPRN	None		

TABLE 3

Sample Preparation			
WebCode	**Method**	**Tool Used**	**Grit Size**
P476XU	Polishing	Dremel	Extra fine Cratex wheel
P6HQLB	Visual	Eye loupe	
	Polishing	Dremel	
P9GAD2	None		
PB2B9M	Polishing	Dremel	
PGRCY2	Visual	SKC-S	
	Visual	Acetone	
PKCDUN	Visual	Eyes inspection	
	Cleaning	Acetone	
PVR883	Sanding	Sand paper	220, 400 and 1000
PY66EP	None		
PZMWNA	Polishing	Dremel	
Q2CKLV	Visual	Magnifying Glass	
Q4YL6N	Polishing	Rotary Tool	Fabric wheel
Q7K9XB	Visual	Visual- observed with eyes	
	Visual	Microscope	
	Visual	Photograph- took photo of item 1 obliterated area as received	
Q9C8BA	Visual	Microscope	
	Sanding	Sand paper	400
	Polishing	Sand paper	600
	Cleaning	Acetone	
QW2M3E	Visual	Stereoscope	
QYKNX2	None		
QYRLGD	Sanding	Sand paper	280
QZ4LD8	Visual	Stereoscope	
	Polishing	Dremel	
R28PFU	Visual		
	Grinding	grinding wheel	
R3KJTA	Sanding	Sand paper	220
R7LD3C	None		

TABLE 3

Sample Preparation			
WebCode	**Method**	**Tool Used**	**Grit Size**
RAKPXC	None		
RC6QTX	Visual	Naked eye	
	Cleaning	Acetone	
RCPGPP	Visual	Stereoscope	
	Polishing	Sand paper	fine, unknown grit size
RE9HKC	Polishing	Steel wool	
	Cleaning	Ethanol	
REELM3	Visual	Stereoscope	
	Polishing	Dremel	120
RG7K22	Polishing	Dremel	
RGYMHP	Visual	Stereoscope	
RRWK34	Visual		
RUPGRX	None		
T23PTY	Sanding	Sand paper	220 and 1000
T3ZX2J	Polishing	Dremel	Extra fine
T7Z9WJ	Visual	Stereoscope	
	Cleaning	Acetone	
TD39H7	None	None were used	
TEU68Z	Sanding	Sand paper	600 grit
THD72M	Polishing	Sand paper	120
TM3WA4	Polishing	Dremel	
TMJZWH	Polishing	Dremel	120
TWDYV4	Polishing	Dremel	
TWQRAJ	None		
TYFW7W	Cleaning	Ethanol	
	Polishing	Dremel	polishing compound
	Sanding	Sand paper	400
TZBT46	Sanding	Sand paper	
	Cleaning	Acetone	
U6KADU	None		

TABLE 3

Sample Preparation			
WebCode	**Method**	**Tool Used**	**Grit Size**
U93GME	Visual	Stereoscope	
	Polishing	Steel wool	
	Sanding	Sand paper	240 grit
	Grinding	Dremel	
U9L2U8	Cleaning	Acetone	
	Cleaning	SKC-S	
UNFTF9	None		
UQYUAU	Cleaning	Acetone	
UTQQYN	Sanding	Dremel	400 grit
	Polishing	Dremel	Simichrome
V44HPV	Polishing	Dremel	
V4HYWG	Sanding	Sand paper	180
	Sanding	Sand paper	120
	Sanding	Sand paper	80
V84LP4	Polishing	Dremel	
V9KQDU	Sanding	Sand paper	400, 600
	Polishing	Dremel	Cotton wheel with red compound
VBGLLV	Polishing	Sand paper	360 grain
VBNJ78	Visual	Stereoscope	
	Sanding	Sand paper	220 grit
VD9JZU	Polishing	Dremel	
VLJLLU	Sanding	Sand paper	unk
VLN9PU	Polishing	Dremel	
VP6GDU	None		
VQFF83	Visual	Stereoscope	
W28FA6	Visual	Stereoscope	
WBHQQW	Visual	Stereoscope	
	Polishing	Dremel	soft polishing wheel
WGNCP2	None		
WJR896	Polishing	Dremel	
WN9AJG	Cleaning	Acetone	

TABLE 3

Sample Preparation			
WebCode	**Method**	**Tool Used**	**Grit Size**
WNPGT6	Polishing	Dremel	
	Sanding	Sand paper	400
WPGJAT	Sanding	Sand paper	400, 1000
WYMFEJ	Visual	ALS	
	Polishing	Emery paper	
	Cleaning	Ethanol	
X7Y3HJ	Visual	Stereoscope	
	Sanding	Sand paper	very fine 240 grit
	Sanding	Sand paper	extra fine 320 frit
X8CCVQ	Visual	Stereoscope	
X9TMUJ	Sanding	Sand paper	1200
XAKPB8	Visual	Stereoscope	
	Polishing	Dremel	425 Wheel
XBCNN6	None		
XCRXPJ	None		
XDLLBY	Visual	Stereoscope	
	Polishing	Dremel	
XECYK6	Polishing	Dremel	
XGLUEA	Visual		
XHWWZ9	None		
XJ7VAW	None		
XMC6N9	None		
XNLA3W	Polishing	Rotary Tool	Medium
XPW7JU	Polishing	Dremel	
XU88QJ	Sanding	Hand	1200
XVLT37	None	Stereoscope	
XWUV3J	Polishing	Emery paper	
XXR9L7	Polishing	Dremel	
Y687TP	Cleaning	Acetone	
YGXZ3X	None		

TABLE 3

Sample Preparation			
WebCode	**Method**	**Tool Used**	**Grit Size**
YH6FA4	Polishing	Emery paper	
YWTHRW	None		
Z2JEUR	Sanding	Sand paper	1000, 220
ZB8VX2	Polishing	Dremel	
	Cleaning	Acetone	
	Cleaning	SKC-S Aerosol Cleaner	
ZCZXEN	None		
ZERWTM	Visual	Stereoscope	
	Polishing	Dremel	
ZH8HMF	Polishing	Rubber wheel	
ZKYECA	Polishing	Steel wool	
ZT8972	Visual	Stereoscope	
ZVY6VV	Visual	Stereoscope	
ZXH7QH	Sanding	Sand paper	220
ZYECJV	Visual	Eyes	
	Visual	Microscope	
	Visual	Photographic	
	Sanding	Sand paper	1200 (very lightly)

Response Summary **Participants: 294**

Sample Preparation

Visual Method: 95

Sanding Method: 70

Polishing Method: 99

None: 72

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.

Recovery Methods

(listed in order of use)

TABLE 4

Recovery Methods		
WebCode	**Method**	**Time**
27BQH2	Fry's Reagent	Approximately 10 minutes, agitating with a sterile swab, multiple applications.
2BRY72	MagnaFlux	Initial attempt
	Acid Etch Method	swabs /2 -3 minutes / 20% Nitric Acid
	MagnaFlux	2nd attempt
	Acid Etch Method	Swabs 2 - 3 minutes / 20% Nitric Acid
	Acidic Ferric Chloride	Swabs 1-2 minutes
	Acid Etch Method	Swabs 1 minute / 10% Sodium Hydroxide
	Fry's Reagent	Swabs less than a minute
2DBZZM	Acid Etch Method	15 minutes
2E7TJD	Fry's Reagent	6 minutes and 12 seconds
2FXP98	25% Nitric Acid	5 Min wiping in one direction with a cotton swab. Then wiping with unused chem wipe
	25% Nitric Acid	5 Min wiping in one direction with a cotton swab. Wipe with unused chem whip
	25% Nitric Acid	5 Min wiping in one direction with a cotton swab. wipe with unused chem wip
2J2NJZ	Acid Etch Method	10 min
2LKPDL	MagnaFlux	
	Fry's Reagent	45 minutes
	Turner's Reagent	15 minutes
	Davis Reagent	15 minutes
2PKZAL	MagnaFlux	
2RUV4Q	MagnaFlux	
	25% Nitric Acid	
	Fry's Reagent	
	hand Polish	
	Fry's Reagent	
2TLUHP	Fry's Reagent	1-5 minutes
	NaOH/Nitric Acid	1-5 minutes
	MagnaFlux	less than 1 minute
2UDWYD	Magnetic Particle Inspection (MPI)	
	MagnaFlux	
	Fry's Reagent	several seconds
2W6VDB	MagnaFlux	
	Acid Etch Method	Davis Reagent
	Turner's Reagent	
	Fry's Reagent	
	MagnaFlux	

TABLE 4

Recovery Methods		
WebCode	**Method**	**Time**
2W8GBC	Magnetic Particle Inspection (MPI)	5 minutes
	Fry's Reagent	5 minutes
2XFNFQ	MagnaFlux	
	Fry's Reagent	
2Y72PV	MagnaFlux	
	Turner's Reagent	5 minutes
	Fry's Reagent	15 minutes
2YQH6Y	Magnetic Particle Inspection (MPI)	3 minutes
	Davis Reagent	1 minute
	Fort's Reagent	3 minutes
	Turner's Reagent	1 minute
	Davis Reagent	30 seconds
	25% Nitric Acid	30 seconds
	Aqua Regia	30 seconds
	Fort's reagent	1 minute
	Turner's Reagent	1 minute
	Davis	30 seconds
	Fry's Reagent	20 seconds
2YYKA4	MagnaFlux	
	Fry's Reagent	3 MINUTES (TOTAL)
39T9CR	Fry's Reagent	Swabbing 30 minutes
3AJLMX	MagnaFlux	
	Fry's Reagent	5 minutes
3DPZJ4	Magnetic Particle Inspection (MPI)	
	Acid Etch Method	Multiple cotton swabs soaked in 20% Nitric Acid (approximately 15 - 20 minutes)
	Magnetic Particle Inspection (MPI)	
3PJDGE	Magnetic Particle Inspection (MPI)	
	Acid Etch Method	Hours, intermittently.
3RNT2Y	MagnaFlux	
	Acid Etch Method	5-10 minutes total
3UTFJA	Fry's Reagent	c. 15 MINUTES
3V3NNN	Restor-A-Gel	51 minutes
3V67UZ	MagnaFlux	
	Fry's Reagent	5 mins
	Sodium Hydroxide	5 mins
	Fry's Reagent	30 mins
	Sodium Hydroxide	10 mins
	Dremel	2 mins
	MagnaFlux	1.5 hrs
	Dremel	2 mins
	MagnaFlux	2 hrs

TABLE 4

Recovery Methods		
WebCode	**Method**	**Time**
4338LD	Acid Etch Method	5 x 10 minutes (day 1)
	Acid Etch Method	20 x 1 minute (day 2)
	Fry's Reagent	20 x 1 minute (day 2)
4K46TF	Magnetic Particle Inspection (MPI)	
4KHR43	Fry's Reagent	30 minutes
	Turner's Reagent	30 minutes
4MM7M2	MagnaFlux	
	Davis Reagent	A few seconds per swab, two swabs, multiple passes per swab.
	Turner's Reagent	A few seconds per swab, approximately 20 swabs, multiple passes per swab.
	Fry's Reagent	A few seconds per swab, approximately 15 to 20 swabs, multiple passes per swab.
4N2TYN	MagnaFlux	
	Fry's Reagent	30 minutes
	Turner's Reagent	10 minutes
	Davis Reagent	10 minutes
	Regal water	10 minutes
	HNO3 concentrate	1 minutes
4ZH7RQ	Fry's Reagent	2
647M7N	MagnaFlux	
	Fry's Reagent	
6JQVF9	Fry's Reagent	1 min
6K2UC3	Magnetic Particle Inspection (MPI)	
	Ferric Chloride	40 min.
	Modified Fry's Reagent	1 hour
6RFTVF	Acid Etch Method	5 minutes
6U9C8F	MagnaFlux	
	MagnaFlux	
	Fry's Reagent	90-120 seconds
	MagnaFlux	
6XMAF3	Davis' Reagent	5 seconds
	Turner's Reagent	5 seconds
	Fry's Reagent	5 seconds
	25% Nitric Acid	5 seconds
	Acidic Ferric Chloride	5 seconds
724UZW	MagnaFlux	
	Fry's Reagent	~20 minutes
	MagnaFlux	
	Fry's Reagent	~20 minutes
	Acid Etch Method	Nitric Acid ~20 minutes
	Fry's Reagent	~20 minutes

TABLE 4

Recovery Methods		
WebCode	**Method**	**Time**
73QMLY	MagnaFlux	
	Davis Reagent	1 second
	Turner's Reagent	1 second
	Fry's Reagent	1 second
73VQNQ	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	Swabbing
	Nitric Acid	Swabbing
74BCXR	MagnaFlux	
	Davis's Reagent	Continuously applied and wiped prior to next acid.
	Turner's Reagent	Continuously applied and wiped prior to next acid.
	Fry's Reagent	Continuously applied and wiped prior to next acid.
77FRJC	Acidic Ferric Chloride	1-3 mins
78QKLR	Fry's Reagent	approx. 5 minutes
79GWWX	MagnaFlux	
	Davis	Less than 1 minute
	Turner's Reagent	Less that 1 minute
7EMQQT	Fry's Reagent	~ 5 minutes
7FLMN4	25% Nitric Acid	apx. 1 min before being swabbed
	Davis Reagent	apx. 1 min before being swabbed
	Turner's Reagent	apx. 1 min before being swabbed
	Fry's Reagent	Less than 1 min before being swabbed
7H6NHP	Fry's Reagent	
7JYMKU	Magnetic Particle Inspection (MPI)	
	Davis's Reagent	Approximately 1 hour
	Fry's Reagent	Approximately 2 hours
	25% Nitiric Acid	Approximately 1 hour
7VEGX9	Fry's Reagent	One minute.
7X7DM3	Magnetic Particle Inspection (MPI)	
	Acid Etch Method	Davis - 2 minutes
	Turner's Reagent	2 minutes
	Fry's Reagent	2 minutes
7ZPEHN	Magnetic Particle Inspection (MPI)	
822JJJ	Fry's Reagent	2-3 minutes
	Turner's Reagent	1 minute
83CFZH	Fry's Reagent	15 minutes
	MagnaFlux	

TABLE 4

Recovery Methods		
WebCode	**Method**	**Time**
84LKD7	MagnaFlux	
	Turner's Reagent	Rubbed on with cotton swab, then wiped off to visualize. Repeated until I saw all characters revealed.
8CKZCQ	Fry's Reagent	20 minutes
	MagnaFlux	
8L8YZB	MagnaFlux	
	Fry's Reagent	~1 minute
8QG337	The sample was eating away chemical solution CuCl*2H2O + HCl + H2O	Time 4 hours
8XV8CH	Acid Etch Method	10-15 minutes
8YRE7V	Acid Etch Method	swabbed for 10 minutes
	MagnaFlux	
9AL6EF	Fry's Reagent	12 minutes
9CVZ7Z	MagnaFlux	
	Davis	Applied with cotton swab
	Turner's Reagent	Applied with cotton swab
	Fry's Reagent	Applied with cotton swab
9URPZ9	Fry's Reagent	Approx. 20min
A3JM4M	MagnaFlux	
	Davis	30 Seconds
	Turner's Reagent	30 Seconds
	Fry's Reagent	30 Seconds
AAXF86	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	5 minutes total
ACRZJ6	MagnaFlux	
	Acid Etch Method	Davis Reagent- ~10-15 minutes
	polishing	
	MagnaFlux	
AD6NKW	MagnaFlux	
	Acid Etch Method	10% Sodium Hydroxide, 25% Nitric Acid swabbed across the number for 5 minutes
	Turner's Reagent	Swabbed across the number for 5 minutes
	Fry's Reagent	Swabbed across the number twice (less than 1 minute)
AEBZDQ	Acid Etch Method	8 min
AEENV6	Turner's Reagent	1 minute
	Davis Reagent	1 minute
	Fry's Reagent	1 minute
	25% Nitric Acid (for contrast)	20 seconds
	Rem Oil for preservation	Left on Item 1
ATX7N9	Fry's Reagent	

TABLE 4

Recovery Methods		
WebCode	**Method**	**Time**
AV6E3K	Acidic Ferric Chloride	~5-10 seconds @ a time, up to 50 swipes
AWVRDQ	Fry's Reagent	10 to 15 seconds for 6 times
B27BZP	Acid Etch Method	About 10 minutes
	Fry's Reagent	About 3 minutes
B7MHNP	Fry's Reagent	5 min
B97JHC	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	Approx. thirty to forty minutes
B9MZBJ	Turner's Reagent	
BB7RML	Acidic Ferric Chloride	
	Fry's Reagent	
BBVYWD	MagnaFlux	
	Davis	not recorded
	Fry's Reagent	not recorded
	25% HCl	not recorded
	10% NaOH	not recorded
	Nitric/phosphoric acid	not recorded
	Griffin Reagent	not recorded
BLB3TB	Magnetic Particle Inspection (MPI)	
	Davis	2 times (~1 min each)
	Fry's Reagent	~30 seconds
	Davis	~1 min
	Davis	~1 min
	Fry's Reagent	~30 seconds
	Davis	3 times (~1 min each)
	Davis	~1 min
BM79MN	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	30 seconds
	Nitric Acid	30 seconds
BVXZKG	MagnaFlux	
	Fry's Reagent	Five minutes.
BYHNKG	Acidic Ferric Chloride	seconds
	Fry's Reagent	seconds
C4B3R4	Fry's Reagent	3.5 hours total
C7FQ9E	Fry's Reagent	~7 seconds
	25% Nitric Acid	~7 seconds
	Fry's Reagent	~7 seconds
	25% Nitric Acid	~7 seconds
	25% Nitric Acid	~7 seconds
CB6G7A	MagnaFlux	
	Fry's Reagent	2 hours

TABLE 4

Recovery Methods		
WebCode	**Method**	**Time**
CC4D4J	Magnetic Particle Inspection (MPI)	
	Davis Reagent	20 seconds
	Turner's Reagent	20 seconds
	Fry's Reagent	1 minute
CGB2EZ	MagnaFlux	
	Fry's Reagent	10 minutes
	MagnaFlux	
CKV3AL	Magnetic Particle Inspection (MPI)	
CKZ7CD	MagnaFlux	
	Turner's Reagent	2-3 minutes
	Fry's Reagent	2-3 minutes
CLMYYF	MagnaFlux	
	Fry's Reagent	
	Turner's Reagent	
	Davis	
CNTJN2	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	wiped away after application
CQL4Z2	MagnaFlux	
	Davis Reagent	15 seconds
	Turner's Reagent	15 seconds
	Fry's Reagent	30 seconds
CT76VM	Fry's Reagent	10-15 minutes
CX3TCU	MagnaFlux	
	Fry's Reagent	3 seconds per swipe
	Turner's Reagent	3 seconds per swipe
	MagnaFlux	
DJW7PH	Fry's Reagent	Pooling/rubbing - multiple hours
EATA7D	MagnaFlux	
ECQZ4C	Fry's Reagent	1 minute
	Polishing	
	Acidic Ferric Chloride	5 minutes
EDLKQC	MagnaFlux	
	Fry's Reagent	30 min
	Turner's Reagent	30 min
	Davis' Reagent	30 min
	25 % nitric acid	30 min
	Nitirc acid, concentrated	30 min
	Aqua regia	10 min
EFPCZC	Acid Etch Method	1 min.

TABLE 4

Recovery Methods		
WebCode	**Method**	**Time**
EFRWVR	Fry's Reagent	10 seconds
	Turner's Reagent	10 seconds
	Davis Reagent	10 seconds
	Turner's Reagent	10 seconds
	Davis Reagent	10 seconds
	20% Nitric Acid	10 seconds
	Turner's Reagent	10 seconds
EKNLCY	MagnaFlux	
	David's Reagent	5-10
	MagnaFlux	
	Turner's Reagent	5-10
	MagnaFlux	
	Fry's Reagent	5-10
	MagnaFlux	
EM9L8L	Fry's Reagent	10-15 min
EQBBYU	Acid Etch Method	1minute, 1 minute
	Fry's Reagent	1 minute, 1minute
	Acidic Ferric Chloride	1 minute
	Ferric Chloride	30 Seconds
EY27NC	Acid Etch Method	20 minutes
	Fry's Reagent	20 minutes
EY6K2D	Fry's Reagent	30 to 60 seconds
	Turner's Reagent	30 to 60 seconds
F3FZ2N	Fry's Reagent	20 minutes total
F6D3HE	MagnaFlux	
FC6NYC	MagnaFlux	3 MINUTES
	Fry's Reagent	5 MINUTES
FECWC3	Magnaflux and Fry's/Acid etch	10 to 30 minute intervals
FG36B7	Magnetic Particle Inspection (MPI)	
	Polishing with steel wool	
	Acid Etch Method	2 hours off and on
	Polishing with emery paper and steel wool	
	Magnetic Particle Inspection (MPI)	
FHV2ZZ	MagnaFlux	7HF
	Fry's Reagent	Applied by Q-tip then used Davis for contrast
	Turner's Reagent	Applied by Q-tip
	MagnaFlux	7HF
FK38L2	Fry's Reagent	3 times over 10 minute period
FK7U4F	Fry's Reagent	The polished surface was treated with Fry's reagent for about 60 minutes. The process (using Fry's Reagent) was alternate repeatedly several times, till the serial number was restored completely.

TABLE 4

Recovery Methods		
WebCode	**Method**	**Time**
FMPVX2	Acid Etch Method	4-5 second per application. 6 total applications
FQ9ZFW	Fry's Reagent	approx 15minutes
FVKXZD	MagnaFlux	
	Fry's Reagent	
FZWY83	Magnetic Particle Inspection (MPI)	
	Turner's Reagent	1-2 seconds per swab
	Davis Reagent	1-2 seconds per swab
	Fry's Reagent	1-2 seconds per swab
	Davis Reagent	1-2 seconds per swab
	Fry's Reagent	1-2 seconds per swab
	Davis Reagent	1-2 seconds per swab
	Fry's Reagent	1-2 seconds per swab
	Davis Reagent	1-2 seconds per swab
	Fry's Reagent	1-2 seconds per swab
GDGTZ8	Magnetic Particle Inspection (MPI)	
	Davis Reagent	Reagents were applied via swipe of saturated swabs, each application was applied for an estimated 5-10 seconds, each reagent was applied more than once.
	Griffin Reagent	Reagents were applied via swipe of saturated swabs, each application was applied for an estimated 5-10 seconds, each reagent was applied more than once.
	Fry's Reagent	Reagents were applied via swipe of saturated swabs, each application was applied for an estimated 5-10 seconds, each reagent was applied more than once.
	Griffin Reagent	Reagents were applied via swipe of saturated swabs, each application was applied for an estimated 5-10 seconds, each reagent was applied more than once.
GHAMA2	Fry's Reagent	
GKEF2F	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	possibly ~5 to 10 minutes
GKJRPB	Fry's Reagent	
	Turner's Reagent	
	Electro-magnetic	
GKLDLR	Fry's Reagent	a couple minutes and looked at repeatedly
	25% Nitric Acid	a couple minutes and looked at repeatedly
GL8E4K	Fry's Reagent	
	Davis	
GM7CQ9	Fry's Reagent	

TABLE 4

Recovery Methods		
WebCode	**Method**	**Time**
GNYBTE	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	<10 seconds; moved reagent back and forth across obliterated area (after sanding)
	25% Nitric Acid	<10 second; moved reagent back and forth across obliterated area (after Fry's Reagent)
	Fry's Reagent	<10 seconds; moved reagent back and forth across the obliterated area (after additional sanding)
GQLWL2	Magnetic Particle Inspection (MPI)	
	Turner's Reagent	10 mins
	Davis' Solution	10 mins
	Fry's Reagent	20 mins
GTCVZZ	Electro-magnetic	
	Fry's Reagent	<60 secs
GU6XFN	Magnetic Particle Inspection (MPI)	
	Davis	~30 seconds
	Fry's Reagent	~30 seconds
	Turner's Reagent	~10 seconds
	Fry's Reagent	~20 seconds
	Fry's Reagent	~20 seconds
	Turner's Reagent	~10 seconds
GVFQJ3	MagnaFlux	
	Turner's Reagent	around 15 minutes
	Fry's Reagent	around 15 minutes
	MagnaFlux	
	Fry's Reagent	around 30+ minutes
GVWWUL	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	5 Minutes
	Fry's Reagent	15 Minutes
H3EVQD	Magnetic Particle Inspection (MPI)	
H3YC7F	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	5 minutes
	Turner's Reagent	5 minutes
HEEC4M	MagnaFlux	
	Acidic Ferric Chloride	~5 minutes
	25% Nitric Acid	~2 minutes
HEP7FN	Acid Etch Method	several intervals of several minutes
HT88ME	Fry's Reagent	4 minutes
HW7JJE	Turner's Reagent	As long as necessary
	Fry's Reagent	Until characters became visible
HZ8DRG	Fry's Reagent	Continuous swiping of reagent onto surface with cotton swabs

TABLE 4

Recovery Methods		
WebCode	**Method**	**Time**
J2FYR3	Magnetic Particle Inspection (MPI)	
	DAVIS	
	Turner's Reagent	
	Fry's Reagent	
J7NHQV	MagnaFlux	
	Cleaning with Magnaflux SKC-S	
	Fry's Reagent	5 minutes
	MagnaFlux	
	Fry's Reagent	5 minutes
	Potassium Dichromate	2 minutes
	Cupric Ammonium Chloride	2 minutes
J9KNK9	Turner's Reagent	10 minutes
	Davis	2 hours total
	Fry's Reagent	30 minutes total
JDREME	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	about 40 minutes total
	Turner's Reagent	about 50 minutes total
	Acid Etch Method	about 30 seconds
	Acid Etch Method	about 3 minutes total
JFBFHZ	MagnaFlux	
	Electro-acid	Momentary, brushed on
JKBHRV	Fry's Reagent	5 minutes
JL4EGP	MagnaFlux	
	Turner's Reagent	Briefly (swiping)
	Fry's Reagent	Briefly (swiping)
JLKPWA	MagnaFlux	
	Turner's Reagent	around 30 seconds
	Fry's Reagent	around 20 seconds
	Fry's Reagent	around 20 seconds
JM2MPA	Fry's Reagent	several minutes overall
	25% Nitric Acid	several minutes overall
	Acidic Ferric Chloride	several minutes overall
JMVJMH	Magnetic Particle Inspection (MPI)	
	Davis Reagent	A few minutes
	Turner's Reagent	A few minutes
	Fry's Reagent	A few minutes
	Turner's Reagent	used as a highlighter after applying Fry's
JPMFCC	MagnaFlux	
	Davis Reagent	1-2 minutes
	Turner's Reagent	1-2 minutes
	Fry's Reagent	1-2 minutes

TABLE 4

Recovery Methods		
WebCode	**Method**	**Time**
JQZXK9	Fry's Reagent	5 minutes
	Acidic Ferric Chloride	10 minutes
	Acidic Ferric Chloride	10 minutes
	Acidic Ferric Chloride	10 minutes
JRQBVE	MagnaFlux	
	Davis	swiped with q-tip (2 minute intervals)
	Turner's Reagent	swiped with q-tip (1-2 minute intervals)
	Fry's Reagent	swiped with q-tip (1-2 minute intervals)
	MagnaFlux	
JT36G7	Magnetic Particle Inspection (MPI)	3-5 minutes
	Acid Etch Method	
K8JBAK	Acid Etch Method	Mulitple short applications
KBZJXK	Acid Etch Method	5 minutes
	Fry's Reagent	
	Turner's Reagent	
	Davis Reagent	
KEJKT7	MagnaFlux	
	Fry's Reagent	10 min
	Acid Etch Method	HNO3 10 min
KHHXFW	MagnaFlux, Fry's, Turner's, electrolytic chemical etching	work item 1 for 3 days
KKNNGJ	MagnaFlux	
KR6YW7	Acid Etch Method	1-2 minutes
KWF8WB	Fry's Reagent	few minutes
KWZQ43	MagnaFlux	20 minutes
	Davis Reagent	~10 minutes
	Turner's Reagent	~10-15 minutes
	Fry's Reagent	less than 5 minutes
L7LECB	MagnaFlux	One minute
	Davis	
	Turner's Reagent	One minute
	Fry's Reagent	One minute
	Turner's Reagent	One minute
	Fry's Reagent	One minute
	Turner's Reagent	One minute
LMQRWD	MagnaFlux	
	Fry's Reagent	+/- 20 min (various stages swabbing)
	Turner's Reagent	+/- 20 min (various stages swabbing)
	MagnaFlux	after sanding with 600 grit sand paper
LN2J39	Acid Etch Method	approx. 3.5 hours total
LPBQ2V	Acid Etch Method	2 minutes 30 environ

TABLE 4

Recovery Methods		
WebCode	**Method**	**Time**
LPHNK8	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	10 seconds intervals for 5 minutes
LPW4P9	Fry's Reagent	1 or 2 minutes at a time.
LR3PFT	Acid Etch Method	10 min
LR6ADU	Fry's Reagent	Approximately 5 minutes
LUNB9G	Magnetic Particle Inspection (MPI)	
	Davis Reagent	
	Turner's Reagent	
	Fry's Reagent	
LWBCQA	MagnaFlux	
	Fry's Reagent	20-30 min
	MagnaFlux	
	Fry's Reagent	60-90 min
LX99NK	Fry's Reagent	briefly
LY2B69	Acid Etch Method	20 minutes
M4TVWV	MagnaFlux	
	Fry's Reagent	5-10 minutes
	MagnaFlux	photo purposes
M66QG2	MagnaFlux	
	Turner's Reagent	10 minutes
	Fry's Reagent	10 minutes
	Turner's Reagent	5 minutes
	Acid Etch Method	5 minutes
	Turner's Reagent	5 minutes
MAH9XH	Magnetic Particle Inspection (MPI)	
	Davis' Reagent	1 hour
	Turner's Reagent	1 hour
	sodium hydroxide and nitric acid	15 minutes
	Magnetic Particle Inspection (MPI)	
	Polish	
	Davis' Reagent	30 minutes
	Turner's Reagent	30 minutes
MHVKQA	MagnaFlux	
	Turner's Reagent	5 minutes
MM96XV	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	a few seconds per application
	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	a few seconds per application
	Fry's Reagent	a few seconds per application
	Magnetic Particle Inspection (MPI)	
MWDCDV	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	less than 5 minutes

TABLE 4

Recovery Methods		
WebCode	**Method**	**Time**
MYVG2T	Magnetic Particle Inspection (MPI)	
N3WP4G	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	one swipe at a time
	Turner's Reagent	one swipe at a time
N64Z27	Acidic Ferric Chloride	Apply in 3 times - few seconds each time
N7AMB6	MagnaFlux	
NAUAC6	Turner's Reagent	1 - 10 minutes
	Fry's Reagent	1 - 10 minutes
	Davis Reagent	1 - 10 minutes
	Magnetic Particle Inspection (MPI)	various intervals between chemical methods
NBMFDG	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	~ 1 min.
	Acid Etch Method	~ 1min.
	Acid Etch Method	~ 1 min.
	Magnetic Particle Inspection (MPI)	
	Acid Etch Method	~ 1 min.
	Magnetic Particle Inspection (MPI)	
NFCB6G	MagnaFlux	
	Ferric Chloride	
	Acidic Ferric Chloride	
	25% Nitric Acid	
NFYDXW	MagnaFlux	seconds
	Turner's Reagent	seconds
	Fry's Reagent	seconds
	Sodium Hydroxide 10 %	seconds
NHRXAW	MagnaFlux	
	Fry's Reagent	brief periods of 10-20 seconds with agitation
NL9KM2	MagnaFlux	
	Fry's Reagent	1 minute
	25% Nitric Acid	1 minute
NNRLHM	Davis	15 seconds
	Turner's Reagent	15 seconds
	Fry's Reagent	15 seconds
NP9VGF	MagnaFlux	
	Acid Etch Method	2 minutes
	Fry's Reagent	45 minutes
NQZR7A	Magnetic Particle Inspection (MPI)	
	Turner's Reagent	Combo of acids for 20 minutes
	Fry's Reagent	
	Magnetic Particle Inspection (MPI)	
	Turner's Reagent	Combo of acids for 10 minutes
	Fry's Reagent	
	Magnetic Particle Inspection (MPI)	

TABLE 4

Recovery Methods		
WebCode	**Method**	**Time**
NT87DF	Magnetic Particle Inspection (MPI)	
	Acid Etch Method	2.5 minutes
NUJJGC	MagnaFlux	
	Acidic Ferric Chloride	2 minutes
	Turner's Reagent	5 minutes
NUJTZW	Electro-acid	16 minutes
NXJ4WV	Fry's Reagent	It was apply, removed and reapply for 10 minutes
NZCN9V	Magnetic Particle Inspection (MPI)	
P2YPRN	Griffin Reagent	1 min
	Fry's Reagent	5 min
P476XU	Fry's Reagent	~5-10 min
P6HQLB	MagnaFlux	
	Turner's Reagent	30 seconds
	Fry's Reagent	6 minutes
	Fort's Solution	4 minutes
	Fry's Reagent	2 minutes
	Fort's Solution	1 minute
	Fry's Reagent	2 minutes
	Turner's Reagent	45 seconds
P9GAD2	Ferric Chloride	Not timed
PB2B9M	Fry's Reagent	15 minutes
PGRCY2	MagnaFlux	
	Nitric Acid	7 seconds
	Davis Reagent	7 seconds
	Turner's Reagent	7 seconds
	MagnaFlux	
	Fry's Reagent	15 seconds
PKCDUN	Cupric ammonium chloride solution	5 to 10 minutes
PVR883	MagnaFlux	
	Fry's Reagent	less than twenty minutes
	Turner's Reagent	less than ten minutes
PY66EP	MagnaFlux	
PZMWNA	MagnaFlux	
	Davis	1 min
	Fry's Reagent	2 mins
Q2CKLV	MagnaFlux	
	Turner's Reagent	2 minutes
	Fry's Reagent	4 minutes

TABLE 4

Recovery Methods		
WebCode	**Method**	**Time**
Q4YL6N	Davis Reagent	Wipe on/off
	Turner's Reagent	Wipe on/off
	Fry's Reagent	Wipe on/off
	Davis	Wipe on/off
	Davis	Approx. 10sec
	Turner's Reagent	Approx. 10sec
	Fry's Reagent	Approx. 30sec
Q7K9XB	Magnetic Particle Inspection (MPI)	
	Davis Reagent	Reagent swiped with q tip from left to right on surface, and repeat, each swipe approximately 2 seconds
	Turner's Reagent	Reagent swiped with q tip from left to right on surface and repeat, each swipe approximately 2 seconds
Q9C8BA	Electro-magnetic	
	Fry's Reagent	5
	Fry's Reagent	5
	Fry's Reagent	5
	Fry's Reagent	3
	Fry's Reagent	3
QW2M3E	MagnaFlux	
	Davis	~2-3 minutes
	Turner's Reagent	~5 minutes
	Fry's Reagent	~5 minutes
QYKNX2	Magnetic Particle Inspection (MPI)	
QYRLGD	Fry's Reagent	20-30 seconds per swabbing. Swabbed multiple times
QZ4LD8	Fry's Reagent	5-10 minutes
R28PFU	MagnaFlux	
	Fry's Reagent	multiple applications ranging from 15 seconds to 1 minute applications
R3KJTA	Acidic Ferric Chloride	15 minutes
	10% sodium hydroxide	10
	phosphoric/nitirc acids	10
R7LD3C	Fry's Reagent	
	MagnaFlux	
RAKPXC	Turner's Reagent	0-1 min
	Fry's Reagent	5 min
RC6QTX	Acid Etch Method	10 minutes
RCPGPP	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	not timed
RE9HKC	Fry's Reagent	Abaut twenty minutes

TABLE 4

Recovery Methods		
WebCode	**Method**	**Time**
REELM3	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	
RG7K22	Magnetic Particle Inspection (MPI)	
	Davis	10 minutes
	Turner's Reagent	7 minutes
	Fry's Reagent	30 seconds
RGYMHP	Fry's Reagent	approximately 15 minutes
RRWK34	MagnaFlux	
	Acid Etch Method	15 min
RUPGRX	Acid Etch Method	10 MINUTES
T23PTY	Fry's Reagent	less than five minutes
T3ZX2J	Fry's Reagent	5 minutes
	Fry's Reagent	5 minutes
	Fry's Reagent	5 minutes
	Fry's Reagent	5 minutes
	Fry's Reagent	5 minutes
	Fry's Reagent	5 minutes
	Fry's Reagent	5 minutes
	Fry's Reagent	5 minutes
	Fry's Reagent	5 minutes
	Fry's Reagent	8 minutes
	Fry's Reagent	8 minutes
	Fry's Reagent	6 minutes
	Fry's Reagent	6 minutes
T7Z9WJ	Acidic Ferric Chloride	15
TD39H7	MagnaFlux	
	Fry's Reagent	~3 minutes
TEU68Z	MagnaFlux	
	Fry's Reagent	less than 30 seconds
	Turner's Reagent	less than 30 seconds
	Davis Reagent	~one minute
	25% Nitric acid	less than 30 seconds
	Fry's Reagent	less than 30 seconds
	Turner's Reagent	~one minute
THD72M	Davis Reagent	A few seconds per swab (2-3 swabs)
	Turner's Reagent	A few seconds per swab (2-3 swabs)
	Fry's Reagent	A few seconds per swab (15-20 swabs)
	Nitric Acid (to highlight)	A few seconds per swab (2-3 swabs)
TM3WA4	Fry's Reagent	20 seconds
	Nitric Acid	30 seconds
	Turner's Reagent	20 seconds
	MagnaFlux	1 minute

TABLE 4

Recovery Methods		
WebCode	**Method**	**Time**
TMJZWH	Fry's Reagent	42HKJ1
TWDYV4	MagnaFlux	
	Turner's Reagent	Approximately 15 seconds
	25% Nitric Acid	Approximately 15 secons
TWQRAJ	MagnaFlux	
	Davis Reagent	1 minute
	Turner's Reagent	1 minute
TYFW7W	MagnaFlux	w/ magnet
	25% HNO3	approx. 15 min. duration then rinse
	Fry's Reagent	dilute and approx. 15 min duration then rinse
	Davis reagent	dilute and approx. 15 min duration then rinse
	Fry's Reagent	less dilute approx. 15 min duration then rinse
	MagnaFlux	varied position of magnet
	MagnaFlux	used different magnet and position
TZBT46	Acid Etch Method	5 minutes
U6KADU	MagnaFlux	
	Davis' Reagent	2 hours
	Turner's Reagent	30 minutes
	Fry's Reagent	30 minutes
U93GME	Fry's Reagent	2-3 Seconds
	Davis Reagent	2-3 Seconds
	Nitric Acid	2-3 Seconds
	MagnaFlux	
U9L2U8	MagnaFlux	
	Davis Reagent	5 minutes
	Turner's Reagent	5 minutes
	Fry's Reagent	1 minute
UNFTF9	MagnaFlux	
	Fry's Reagent	Over an hour and a half with multiple applications of the reagent
UQYUAU	Acid Etch Method	10 minutes
UTQQYN	Cupric Ammonium Chloride	
V44HPV	MagnaFlux	
	Acid Etch Method	2 minute Davis Reagent
	Fry's Reagent	1 minute
V4HYWG	Turner's Reagent	
	Modified Fry's Reagent	
	Fry's Reagent	
V84LP4	Magnetic Particle Inspection (MPI)	
	Aqua Regia	5 minutes
	Ferric Chloride	12-15 minutes
V9KQDU	Fry's Reagent	5-10 minutes

TABLE 4

Recovery Methods		
WebCode	**Method**	**Time**
VBGLLV	Electro-magnetic	not efficient
	Acid Etch Method	for 10 minutes with swab
VBNJ78	25% Nitric Acid	5-10 minutes of agitating the surface with the acid on a swab.
VD9JZU	Fry's Reagent	1:30 Min
VLJLLU	Fry's Reagent	no more than 30 seconds
	Davis reagent	no more than 30 seconds
	Turner's Reagent	no more than 30 seconds
	25% Nitric Acid	no more than 30 seconds
VLN9PU	Fry's Reagent	continuous swiping - 1 hr, then let sit 30 min intervals
	Cupric Ammonium Chloride	continuous swiping, not much reaction
	20% Nitric Acid	continuous swiping - 1 hr, then let sit 10 min intervals. Switched back and forth between Fry's and nitric, approximate time 8.5 hrs.
VP6GDU	MagnaFlux	
	Davis Reagent	Approximately 2-3 minutes
	Turner's Reagent	Approximately 2-3 minutes
	Fry's Reagent	Approximately 2-3 minutes
VQFF83	Magnetic Particle Inspection (MPI)	
	Turner's Reagent	1 minute
	Fry's Reagent	1 minute
W28FA6	MagnaFlux	
WBHQQW	MagnaFlux	
	Davis (CuCl2, HCL)	1 minute (alternating with Fry)
	Fry's Reagent	1 minute (alternating with Davis)
	MagnaFlux	
WGNCP2	MagnaFlux	
WJR896	Turner's Reagent	5 minutes
	Fry's Reagent	5 minutes
WN9AJG	Electro-acid	Ca 20 minutes
WNPGT6	10% Nitric Acid	30 minutes
	Acidic Ferric Chloride	30 minutes
WPGJAT	MagnaFlux	No applies
	Fry's Reagent	5 minutes
WYMFEJ	Fry's Reagent	10min
X7Y3HJ	MagnaFlux	
X8CCVQ	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	used cotton swab and continuous swiping
X9TMUJ	Acid Etch Method	brief wipes with nitric acid

TABLE 4

Recovery Methods		
WebCode	**Method**	**Time**
XAKPB8	10% Nitric Acid	5 minutes, 3 times; Swabbed 24 times
	10% Nitric Acid	90 minutes, 1 time
	Davis Reagent	Swabbed 14 times
	Fry's Reagent	10 minutes, 4 times; Swabbed 8 times
XBCNN6	Acid Etch Method	2 min
	Fry's Reagent	1 min
	Acid Etch Method	3 min
	Turner's Reagent	1 min
XCRXPJ	Acid Etch Method	2-5 seconds
XDLLBY	MagnaFlux	
	Davis's Reagent	Applied and wiped across surface repeatedly. Application was not timed.
	Turner's Reagent	Applied and wiped across surface repeatedly. Application was not timed.
	Fry's Reagent	Applied and wiped across surface repeatedly. Application was not timed.
XECYK6	MagnaFlux	
	Davis' Reagent	20 min
	Turner's Reagent	20 min
	Fry's Reagent	2 hrs
	MagnaFlux	
XGLUEA	Davis Reagent	1-2 mins
	Turner's Reagent	1-2 mins
	Fry's Reagent	1-2 mins
	10% Nitric Acid	4-5 mins
XHWWZ9	Acid Etch Method	Approximately 20 minutes
	Electro-acid	Approximately 10 minutes
	Fry's Reagent	Alternated with Davis reagent
	Alternated with 25% Nitric Acid	
XJ7VAW	Turner's Reagent	30 seconds
	Fry's Reagent	1 minute
XMC6N9	Magnetic Particle Inspection (MPI)	
	Davis	swipes for 15 min
	Turner's Reagent	swipes for 15 min
XNLA3W	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	5 minutes
XPW7JU	Turner's Reagent	
XU88QJ	Fry's Reagent	2hrs 40 min
	20% Nitric Acid	25 min
XVLT37	Magnetic Particle Inspection (MPI)	
	Acid Etch Method	~1 minute
XWUV3J	Fry's Reagent	Three sucessive attacks : 2 mn - 2mn - 1mn

TABLE 4

Recovery Methods		
WebCode	**Method**	**Time**
XXR9L7	Davis	
	Turner's Reagent	
	Fry's Reagent	
	MagnaFlux	
Y687TP	Acid Etch Method	
YGXZ3X	MagnaFlux	
	Fry's Reagent	Swabbed on and rubbed.
YH6FA4	Fry's Reagent	
	Acidic Ferric Chloride	
YWTHRW	MagnaFlux	
	Davis'/Turner's	5 mins
	Turner's/Fry's	5 mins
	Nitric Acid	1 min
	Turner's/Fry's	1 min
Z2JEUR	MagnaFlux	
	Fry's Reagent	two hours approximately
	Nitric acid 25%	30 minutes approximately
ZB8VX2	Davis Reagent	3 minutes
	Turner's Reagent	3 minutes
	Fry's Reagent	18 minutes
	MagnaFlux	
ZCZXEN	MagnaFlux	
ZERWTM	Fry's Reagent	approximately 10-15 min.
	Acidic Ferric Chloride	approximately 1-3 min.
ZH8HMF	Fry's Reagent	Total of 1 hour, 28 minutes.

TABLE 4

Recovery Methods		
WebCode	**Method**	**Time**
ZKYECA	Davis	4/25/24. Consecutively applied over ≤4 hours for ≤1 minute per application.
	Turner's Reagent	4/25/24. Consecutively applied over ≤4 hours for ≤1 minute per application.
	Fry's, steel wool, dremel	4/25/24. Consecutively applied over ≤4 hours for ≤1 minute per application.
	25% Nitric Acid	4/25/24. Consecutively applied over ≤4 hours for ≤1 minute per application.
	Steel wool, Fry's	4/25/24. Consecutively applied over ≤4 hours for ≤1 minute per application.
	Steel wool, Fry's	4/29/24. Consecutively applied over ≤5 hours for ≤1 minute per application.
	25% Nitric Acid	4/29/24. Consecutively applied over ≤5 hours for ≤1 minute per application.
	Steel wool, Fry's	4/29/24. Consecutively applied over ≤5 hours for ≤1 minute per application.
	Dremel, Fry's	4/29/24. Consecutively applied over ≤5 hours for ≤1 minute per application.
	Steel wool, Fry's	4/30/24. Consecutively applied over ≤4 hours for ≤1 minute per application.
	Dremel, Fry's	4/30/24. Consecutively applied over ≤4 hours for ≤1 minute per application.
	Fry's, 25% Nitric Acid	4/30/24. Consecutively applied over ≤4 hours for ≤1 minute per application.
	Steel wool, Fry's	4/30/24. Consecutively applied over ≤4 hours for ≤1 minute per application.
	Steel wool, Magnaflux	4/30/24
ZT8972	MagnaFlux	
	Acid Etch Method	25
ZVY6VV	Fry's Reagent	1-2 hours of constant scrubbing
ZXH7QH	Davis Reagent	15 min
	Fry's Reagent	5 min
ZYECJV	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	10 mins approx. total
	Turner's Reagent	6-10 mins approx. total
	Davis' Reagent	3 mins approx.
	10% Nitric Acid	1 min approx.
	Phosphoric/Nitric Acids	<1 min approx.

Response Summary **Participants: 293**

Recovery Methods

Chemical Processing: 276

Magnetic Processing: 167

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.

Additional Comments

TABLE 5

WebCode	Additional Comments
2BRY72	Characters did not appear uniform in depth of obliteration. This caused characters to disappear quickly.
2E7TJD	The surface area was already significantly polished and smooth. It did not require the use of the rubber wheel. Polishing the area with ultra fine grain paper was suitable prior to the application of the Fry's Solution. Method 55 V3.2, Frys exp 12/2/25
2LKPDL	Reagents were tested on Item 1 and were found to be working. After repeated applications of etching reagents failed to further resolve the serial number and light pitting was noted, restoration was ceased.
4338LD	We used our usual protocols and tested our home-made solution to reveal the erased characters on a steel bar that we had struck ourselves. The test was positive. In the absence of results on the quality control support, we made numerous attempts to reveal the characters (polishing to varying degrees, application of manufactured solutions and home-made solutions). Despite all these attempts, we were unable to reveal any characters and we are surprised by this result.
4N2TYN	The sequence was obtained by magnetic process with the exception of one letter (the "H"), which was confirmed by chemical development, specifically with regal water. It was not possible to recover the entire sequence clearly after applying the chemical process. In this case, magnetic process was better than quimical process.
647M7N	Recovered serial number was not the clearest, but appeared to be clear enough to read.
6K2UC3	Both acid etching methods were used in an attempt to confirm the MPI result; however, neither was successful at restoring the characters.
6U9C8F	Item 1 was polished further between first and second Magnaflux.
6XMAF3	After at least 6 hours of applying chemical etchant to this item, the hint of a serial number was never observed. There are concerns regarding the quality of this proficiency test.
8QG337	As a result of the above-mentioned method, no marking characters were revealed in the number field.
9CVZ7Z	This was a fair test and provided the right amount of chemical etching for testing procedures.
9URPZ9	The application of the reagent was done using a cotton tip applicator and the etching solution was pooled on and rubbed across the metal surface.
B9MZBJ	Chemically and magnetically restored to read 42HKJ1.
C4B3R4	The third digit was at least a "P", but it never became clear enough to be certain and an "R" cannot be ruled out. Consequently, the third digit was left blank. We would normally report the sequence was either 42PKJ1 OR 42RKJ1 if this was an actual case, for the information of investigators.
CC4D4J	More real world types of tests would be useful.
CGB2EZ	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.

TABLE 5

WebCode	Additional Comments
FECWC3	This was a difficult restoration attempt as although the chemical etchant's pased our QC tests, only the last number "1" was clearly visible. Using Magnaflux, it aappeared there might have been more than 6 characters. Chemical Etchant's did almost nothing during the restoration attempt.
FG36B7	The obliteration method used left many parallel striations that were perpendicular to the orientation of the characters. These lines hampered visualization of the characters. Magnetic Particle inspection appeared to be advantageous over chemical etching, but polishing away the parallel lines was needed to effect better visualization. Hand-polishing was used to eliminate the smallest amount of material possible.
FK38L2	Metal block 64mm x 25mm with smooth cut/milled section in centre top. As the area was smooth, used P1200 sandpaper and steel wool to remove any mill marks. Approx. 5 minutes of this action. No numbers visible after this action. Utilised Fry's Macro Reagent by wiping cotton swabs dipped in Fry's over surface. Repeated wipes with wet swab over surface and re-application of Fry's approx. 3 times over 10 minute period. Re-applied steel wool again to shine area up as Fry's had dulled it. New swab used to reapply Fry's and number 1 started to show. Left Fry's for another couple of minutes. Continued to wipe swab back and forward with a Fry's wet swab and the remainder of the number started appearing. One more application of steel wool and another new swab with Fry's and the number showed enough for me to identify it and photograph. I had to work the 2 a little, as initially I thought it might be a 7, however I was able to recover the base of the 2. The shape of the upper part of the 2 was a close resemblance of the 2 in the sample numbers given, rather than the 7. No signs of other numbers in the milled area.
GVWWUL	I appreciated having the arrow indicating the upward orientation of the serial number.
H3EVQD	No surface preparation was done. The obliterated area already had a mirror like surface.
HEP7FN	Light polishing with 500 grit sand paper was too much, and probably unnecessary, as the number was already shallow. It probably would have been better if I had done zero surface prep.
J2FYR3	One (1) piece of steel bar stock (2 ½" X 1") submitted with a suspected obliterated serial number. Approximately 1" X 1" area of surface defaced through abrasions/ grinding. Chemical restoration techniques resulted in a partial restoration to "42?KJ1" with the 3rd character a possible N or H. Evidence scribed with [Initials]-24-00714 by examiner for identification purposes. NOTE: Above evidence was submitted in a tan envelope labelled "2024 CTS Forensic Testing program. Test No. 24-5250: Serial number restoration Sample pack: SNR1.
J9KNK9	The serial number was faint and extremely difficult to photograph.
JDREME	The second character was challenging this year. It appears the obliteration is approaching the boundary of the plastic deformation layer.
KHHXFW	Nothing appeared. Not even a partial character line. Acids were successfully used in casework after CTS Test completed.
LN2J39	1st character is a 4 because no left diagonal appeared and the carrot (^) is more to the right and not centered. 2nd character is a 2 because curved top, flat bottom and a diagonal (/) from right to left, top to bottom. 3rd character is a H because two vertical lines connected by one horizontal line, centered top to bottom. 4th character is a K because vertical left side with two diagonal (<) lines on the right, one coming from the top right and the other going down to the right. 5th character is J because straight right side with a curved bottom. 6th character is 1 because single vertical line with a short diagonal carrot at the top going down and to the left.

TABLE 5

WebCode	Additional Comments
LR6ADU	I spot tested the acid etching reagent, Fry's, on a separate area of the flat metal bar stock (Item 1) prior to application of the reagent to the suspect area. Application of reagent using a cotton tip. Used running hot water post reagent application to further enhance restored characters.
LWBCQA	Polishing was done between each Fry's reagent step.
M66QG2	Acid etch method: Nitric Acid was used.
MAH9XH	The obliterated serial number was restored after the initial application of the Davis and Turner's reagents; however, it was very faint and remained so. The subsequent methods were used to attempt to make the restoration more readily visible.
MM96XV	EXAMINATION: The serial number on the steel bar had been obliterated. The area of the serial number was processed with chemical etchants and magnetic techniques.
N3WP4G	First character could be either an "A" or a "4". Could not get the whole character restored.
N64Z27	We never experienced such difficult to restore a serial number in this proficiency CTS program. The steel bar was grind very depth.
N7AMB6	No reagent development technique is used, since the sequence of interest was obtained with magnaflux.
NAUAC6	One (1) metal bar stock (ferrous), measuring approximately 2 1/2" x 1". "Serial number" obliterated by possible milling. Received in a tan envelope marked "Test No. 24-5250". Bar stock was scribed "CTS 24-5250C" for identification.
NHRXAW	The aluminum standard was missing certain characters; no scenario data was available for this test so it was unclear if those missing characters were possible or excluded from the test.
NNRLHM	The sequence of methods were used multiple times to restore the serial number. Photographs were taken throughout the process.
NP9VGF	Lower part of second character took a while to resolve.
NQZR7A	REMARKS: The submitted item(s) will be transferred to Crime Laboratory Analyst Supervisor [Name]. Questions regarding this report should be addressed to: [email]
NXJ4WV	Fry's Reagent was applied with cotton- tipped applicators for two minute intervals, 5 times
PKCDUN	The original serial number of the steel bar is 42HKJ1.
Q4YL6N	The sample item was determined to be a ferrous material. The item was polished with a fabric material used in a rotary tool. Davis, Turner, Fry's reagents were wiped on/off in order with a cotton applicator. These reagents were applied again, in same order, however each were left to pool for a short time. A full restoration of "42HKJ1" was achieved.
R7LD3C	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.
RAKPXC	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.

TABLE 5

WebCode	Additional Comments
RGYMHP	Reagent was applied with cotton- tipped applicators for two minute intervals.
TM3WA4	One character could not be fully developed, as signified by the asterisk in conclusion statement. Character could potentially be an H, N, or U based on the partial observation of the character during restoration.
TWDYV4	Alternated between MPI/acid etchant.
TWQRAJ	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.
UNFTF9	MPI not photographed due to the transient nature of the solution. Measured the grind depth. 0.2335 inches (grind portion thickness) subtracted from 0.2490 (bar stock thickness) = 0.0155 inches. Possible letters observed in the first step with magnaflux were not definitive. Subsequent steps were also not definitive.
UTQQYN	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.
VBGLLV	When using the electromagnetic method, the piece of metal was heated and without allowing it to cool, chemical development was used; giving an excellent result.
VLJLLU	The first digit was not fully restored but is believed to be a 4.
X8CCVQ	Did not smooth or polish surface area prior to restoration as it was already relatively smooth, did not want to risk removing too much material before trying acid etching.
XPW7JU	Chemically, magnetically restored to read 42HKJ1.
XU88QJ	Please note that the conclusions reported are done so under the assumption that the only characters that are in use for this test are those which appear on the Aluminium Standard i.e 0,1,2,3,4,5,6,7,8,9, A, B, C, D, E, F, H, J, K, and N. If this is not the case a more conservative conclusion would be reported.
YH6FA4	Thank you.

-End of Report-
(Appendix may follow)

Collaborative Testing Services ~ Forensic Testing Program

Test No. 24-5250: Serial Number Restoration

DATA MUST BE SUBMITTED BY **April 29, 2024, 11:59 p.m. EDT** TO BE INCLUDED IN THE REPORT

Participant Code: U1234A WebCode: GHUE8T

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 in an upward position on the Item 1 barstock to represent the orientation.
-If your aluminum standard has manufacturing text on the back, please disregard and only reference the stamped characters on the front.

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 preparation methods were used prior to attempts at restoration?

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

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

4.) What restoration 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?

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

A2LA Certificate No.

Step 2: Complete the Laboratory Identifying Information in its entirety

Authorized Contact Person and Title

Laboratory Name

Location (City/State)