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FORENSIC TESTING PROGRAM

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Serial Number Restoration
Test No. 25-5250 Summary Report

Each participant received a sample pack containing 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 alphanumeric characters, which they were asked to restore the obliterated serial number using their existing protocols. Data were returned from 325 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 pack 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 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 was stamped with six characters, 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 pack 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 PACK ASSEMBLY: 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 pack envelope and sealed.

VERIFICATION: Predistribution results were consistent with each other and the manufacturer's preparation information.

Character 1	Character 2	Character 3	Character 4	Character 5	Character 6
K	3	D	N	5	9

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 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. The serial number to be restored consisted of six characters (K3DN59). Refer to the Manufacturer's Information for preparation details.

In Table 1: Recovered Characters, 321 of the 325 responding participants (99%) restored all six characters. Of the remaining four participants, three restored five of the six characters and one participant could not restore any of the six characters.

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.

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
24D76K	K	3	D	N	5	9
26N3EV	K	3	D	N	5	9
2EB2AA	K	3	D	N	5	9
2U9YPK	K	3	D	N	5	9
2WVT99	K	3	D	N	5	9
2Y3FWR	K	3	D	N	5	9
33GD3U	K	3	D	N	5	9
33YYGH	K	3	D	N	5	9
363WPP	K	3	D	N	5	9
367GHY	K	3	D	N	5	9
37WFVX	K	3	D	N	5	9
3928LP	K	3	D	N	5	9
396RDY	K	3	D	N	5	9
3AVW77	K	3	D	N	5	9
3AYHJD	K	3	D	N	5	9
3ETHVN	K	3	D	N	5	9
3LPA4H	K	3	D	N	5	9
3QGGMQ	K	3	D	N	5	9
3QK2EZ	K	3	D	N	5	9
3VD2TV	K	3	D	N	5	9
3VEUTN	K	3	D	N	5	9
47TDJX	K	3	D	N	5	9
4AUEPM	K	3	D	N	5	9
4CHR96	K	3	D	N	5	9
4DRY9C	K	3	D	N	5	9
4ML3LL	K	3	D	N	5	9

TABLE 1

Recovered Characters						
WebCode	Character 1	Character 2	Character 3	Character 4	Character 5	Character 6
4TMEGJ	K	3	D	N	5	9
4UYWUW	K	3	D	N	5	9
4VTMZC	K	3	D	N	5	9
4W3RDZ	K	3	D	N	5	9
646ZH8	K	3	D	N	5	9
6CY93X	K	3	D	N	5	9
6HJU2R	K	3	D	N	5	9
6HKEGK	K	3	D	N	5	9
6JFWJL	K	3	D	N	5	9
6UDAQR	K	3	D	N	5	9
6UEH2D	K	3	D	N	5	9
6XETXD	K	3	D	N	5	9
6YQP3H	K	3	D	N	5	9
74EPW4	K	3	D	N	5	9
78Z2QM	K	3	D	N	5	9
7A62TL	K	3	D	N	5	9
7BZKYT	K	3	D	N	5	9
7FUJAH	K	3	D	N	5	9
7HF4EL	K	3	D	N	5	9
7HVM26	K	3	D	N	5	9
7JTQYL	K	3	D	N	5	9
7KLQUC	K	3	D	N	5	9
7LWQTR	K	3	D	N	5	9
7UBCZA	K	3	D	N	5	9
7XAFKN	K	3	D	N	5	9
7ZF83H	K	3	D	N	5	9
83HCAB	K	3	D	N	5	9
84BU46	K	3	D	N	5	9

TABLE 1

	Recovered Characters					
WebCode	Character 1	Character 2	Character 3	Character 4	Character 5	Character 6
88TPQA	K	3	D	N	5	9
8F8BZD	K	(3,8)	D	N	5	9
8HRHY2	K	3	D	N	5	9
8K36XE	K	3	D	N	5	9
8LC623	K	3	D	N	5	9
8PDDZ6	K	3	D	N	5	9
8PGV8F	K	3	D	N	5	9
8PXW7C	K	3	D	N	5	9
8QKTAW	K	3	D	N	5	9
93EBLG	K	3	D	N	5	9
96397M	K	3	D	N	5	9
9989DT	K	3	D	N	5	9
9A2YJ8	K	3	D	N	5	9
9D2AE8	K	3	D	N	5	9
9DD8KC	K	3	D	N	5	9
9DXBAK	K	3	D	N	5	9
9LW894	K	3	D	N	5	9
9NWJXA	K	3	D	N	5	9
9QNEM4	K	3	D	N	5	9
9RYG93	K	3	D	N	5	9
9U2FN4	K	3	D	N	5	9
9U4AZF	K	3	D	N	5	9
9UK2E7	K	3	D	N	5	9
9XQKKE	K	3	D	N	5	9
9YHM69	K	3	D	N	5	9
A7D6XQ	K	3	D	N	5	9
AE4MCY	K	3	D	N	5	9
AGUQ67	K	3	D	N	5	9

TABLE 1

Recovered Characters						
WebCode	Character 1	Character 2	Character 3	Character 4	Character 5	Character 6
AH4ZUH	K	3	D	N	5	9
AH6TQ6	K	3	D	N	5	9
AH9BWF	K	3	D	N	5	9
ANB68B	K	3	D	N	5	9
APNWX8	K	3	D	N	5	9
ARQYM9	K	3	D	N	5	9
AT9E9K	K	3	D	N	5	9
AYT2WF	K	3	D	N	5	9
B369QT	K	3	D	N	5	9
B3AQPR	K	3	D	N	5	9
B3DLNK	K	3	D	N	5	9
B44GV7	K	3	D	N	5	9
BAPCWA	K	3	D	N	5	9
BGB3KQ	K	3	D	N	5	9
BJEPQM	K	3	D	N	5	9
BJTL3Y	K	3	D	N	5	9
BUHFUJ	K	3	D	N	5	9
BVTHGH	K	3	D	N	5	9
C4F3YK	K	3	D	N	5	9
C7JT4E	K	3	D	N	5	9
CCRRKR	K	3	D	N	5	9
CFARZ8	K	3	D	N	5	9
CGNBQX	K	3	D	N	5	9
CK7FJZ	K	3	D	N	5	9
CMCU9E	K	3	D	N	5	9
CMURKQ	K	3	D	N	5	9
CT44HC	K	3	D	N	5	9
CTYQQA	K	3	D	N	5	9

TABLE 1

Recovered Characters						
WebCode	Character 1	Character 2	Character 3	Character 4	Character 5	Character 6
CUTCLL	K	3	D	N	5	9
CYK92J	K	3	D	N	5	9
CYM2UZ	K	3	D	N	5	9
D27PZB	K	3	D	N	5	9
D3GPYQ	K	3	D	N	5	9
D98XPC	K	3	D	N	5	9
DA3MMD	K	3	D	N	5	9
DBCRZ3	K	3	D	N	5	9
DFQ64B	K	3	D	N	5	9
DJ9PPQ	K	3	D	N	5	9
DJQGYB	K	3	D	N	5	9
DNGQ99	K	3	D	N	5	9
DTGWRK	K	3	D	N	5	9
E7XC74	K	3	D	N	5	9
EAXM34	K	3	D	N	5	9
EF2N6J	K	3	D	N	5	9
EFZW9W	K	3	D	N	5	9
EMKWNA	K	3	D	N	5	9
ENZGQE	K	3	D	N	5	9
EQ2ZVE	K	3	D	N	5	9
ET9E67	K	3	D	N	5	9
EU6VG3	K	3	D	N	5	9
F22AHU	K	3	D	N	5	9
F4NE7E	K	3	D	N	5	9
F7RJRT	K	3	D	N	5	9
F8PMPA	K	3	D	N	5	9
FDR4R4	K	3	D	N	5	9
FDYFQF	K	3	D	N	5	9

TABLE 1

Recovered Characters						
WebCode	Character 1	Character 2	Character 3	Character 4	Character 5	Character 6
FE7T9G	K	3	D	N	5	9
FL8KLX	K	3	D	N	5	9
FT6CT8	K	3	D	N	5	9
FVT9CD	K	3	D	N	5	9
FYTXZT	K	3	D	N	5	9
FZ6QFT	K	3	D	N	5	9
G879QY	K	3	D	N	5	9
G8KRBW	K	3	D	N	5	9
GBZ6D6	K	3	D	N	5	9
GE37D2	K	3	D	N	5	9
GEFW4X	K	3	D	N	5	9
GJUA87	K	3	D	N	5	9
GJUXGC	K	3	D	N	5	9
GLL9L4	K	3	D	N	5	9
GMFA98	K	3	D	N	5	9
GQEL68	K	3	D	N	5	9
GTYEYM	K	3	D	N	5	9
GWHEE3	K	3	D	N	5	9
GXDXG4	K	3	D	N	5	9
GZH94E	K	3	D	N	5	9
H8YC47	K	3	D	N	5	9
HCRHD3	K	3	D	N	5	9
HG6QUU	K	3	D	N	5	9
HJTWY4	K	3	D	N	5	9
HQC3XV	K	3	D	N	5	9
HQDVUH	K	3	D	N	5	9
HV464G	K	3	D	N	5	9
HZZTH3	K	3	D	N	5	9

TABLE 1

Recovered Characters						
WebCode	Character 1	Character 2	Character 3	Character 4	Character 5	Character 6
J32GCJ	K	3	D	N	5	9
J3XWKA	K	3	D	N	5	9
JAKMAP	K	3	D	N	5	9
JJL6KT	K	3	D	N	5	9
JTG3F9	K	3	D	N	5	9
JTTP6A	K	3	D	N	5	9
JTWAXJ	K	3	D	N	5	9
JU92U7	K	3	D	N	5	9
JVJ4F6	K	3	D	N	5	9
JX4XBK	K	3	D	N	5	9
KACZ83	K	3	D	N	5	9
KAY9G7	K	3	D	N	5	9
KAZ7R3	K	3	D	N	5	9
KDYJC7	K	3	D	N	5	9
KE8U64	K	3	D	N	5	9
KF6PK8	K	3	D	N	5	9
KF6ZRR	K	3	D	N	5	9
KGDGH9	K	3	D	N	5	9
KMK968	K	3	D	N	5	9
KRWQ72	K	3	D	N	5	9
KTRA93	K	3	D	N	5	9
KU747B	K	3	D	N	5	9
KVETD8	K	3	D	N	5	9
KY2X4C	K	3	D	N	5	9
KZRQME	K	3	D	N	5	9
KZTGX4	K	3	D	N	5	9
L6EZ9X	K	3	D	N	5	9
L93CAN	K	3	D	N	5	9

TABLE 1

	Recovered Characters					
WebCode	Character 1	Character 2	Character 3	Character 4	Character 5	Character 6
LDVEB3	K	3	D	N	5	9
LGRZ36	K	*	D	N	5	9
LGVKUE	K	3	D	N	5	9
LHMJ9D	K	3	D	N	5	9
LKYEU6	K	3	D	N	5	9
LMG7T8	K	3	D	N	5	9
LQHEC3	K	3	D	N	5	9
LW84NZ	K	3	D	N	5	9
LYBMG9	K	3	D	N	5	9
M43KEW	K	3	D	N	5	9
M4KZY8	K	3	D	N	5	9
M6UJRU	K	3	D	N	5	9
M76JPP	K	3	D	N	5	9
MDMHAB	K	3	D	N	5	9
MKQVZY	K	3	D	N	5	9
MNLRN4	K	3	D	N	5	9
MY9NQQ	K	3	D	N	5	9
NDN3Q4	K	3	D	N	5	9
NEYQ8U	K	3	D	N	5	9
NLJC99	K	3	D	N	5	9
NMRYTL	K	3	D	N	5	9
NP3W73	K	3	D	N	5	9
NQRBNL	K	3	D	N	5	9
NWW9WP	K	3	D	N	5	9
P33PY7	K	3	D	N	5	9
P4DZ63	K	3	D	N	5	9
P4FW8L	K	3	D	N	5	9
PGYE2B	K	3	D	N	5	9

TABLE 1

Recovered Characters						
WebCode	Character 1	Character 2	Character 3	Character 4	Character 5	Character 6
PUBPRL	K	3	D	N	5	9
PVH62D	K	3	D	N	5	9
PWBV7R	K	3	D	N	5	9
PYKVCY	K	3	D	N	5	9
Q3EJYJ	K	3	D	N	5	9
Q8BDBL	K	3	D	N	5	9
QAJZVY	K	3	D	N	5	9
QGFKR8	K	3	D	N	5	9
QHALZW	K	3	D	N	5	9
QKE9D2	K	3	D	N	5	9
QKG2AN	K	3	D	N	5	9
QKJJFZ	K	3	D	N	5	9
QPCM8K	K	3	D	N	5	9
R2YJFU	K	3	D	N	5	9
R4MVGK	K	3	D	N	5	9
R4PDMW	K	3	D	N	5	9
R84BTX	K	3	D	N	5	9
RJJAET	K	3	D	N	5	9
RJKZPK	K	3	D	N	5	9
RQDBV8	K	3	D	N	5	9
RTNXRZ	K	3	D	N	5	9
RTRHJA	K	3	D	N	5	9
RW6ETJ	K	3	D	N	5	9
T4GXJU	K	3	D	N	5	9
T783F8	K	3	D	N	5	9
T9FEVN	K	3	D	N	5	9
TD9GYN	K	3	D	N	5	9
TE6UMG	K	3	D	N	5	9

TABLE 1

Recovered Characters						
WebCode	Character 1	Character 2	Character 3	Character 4	Character 5	Character 6
TH2FDJ	K	3	D	N	5	9
TMU6P4	K	3	D	N	5	9
TQTW3M	K	3	D	N	5	9
TTKVGL	K	3	D	N	5	9
TVNQZN	K	3	D	N	5	9
TXFAW4	K	3	D	N	5	9
TXZHYX	K	3	D	N	5	9
U4GLTZ	K	3	D	N	5	9
U8D2P8	K	3	D	N	5	9
U8GWPZ	K	3	D	N	5	9
U98RVL	K	3	D	N	5	9
UBE6JG	K	3	D	N	5	9
UBVUU2	K	3	D	N	5	9
UD2RAG	K	3	D	N	5	9
UDM6YU	K	3	D	N	5	9
UEWACH	K	3	D	N	5	9
UGN4B9	K	3	D	N	5	9
ULFF9P	K	3	D	N	5	9
UN7RRV	K	3	D	N	5	9
V29KWE	K	3	D	N	5	9
V63LUL	K	3	D	N	5	9
VN2GPX	K	3	D	N	5	9
VN62G8	K	3	D	N	5	9
VRG9FQ	K	3	D	N	5	9
VRHCKG	K	3	D	N	5	9
VUNWB3						
VWWKVF	K	3	D	N	5	9
VXM973	K	3	D	N	5	9

TABLE 1

Recovered Characters						
WebCode	Character 1	Character 2	Character 3	Character 4	Character 5	Character 6
W3WEBT	K	3	D	N	5	9
W49VN7	K	3	D	N	5	9
W66BWW	K	3	D	N	5	9
W684RJ	K	3	D	N	5	9
WCLYGQ	K	3	D	N	5	9
WGVRHW	K	3	D	N	5	9
WJ4EZN	K	3	D	N	5	9
WKHW4U	K	3	D	N	5	9
WM3VDH	K	3	D	N	5	9
WP7NA2	K	3	D	N	5	9
WXNXVD	K	3	D	N	5	9
WXNZKG	K	3	D	N	5	9
X924ZY	K	3	D	N	5	9
X9KQWV	K	3	D	N	5	9
XB4CD3	K	3	D	N	5	9
XQHKCK	K	3	D	N	5	9
XTN9RB	K	3	D	N	5	9
XYA22P	K	3	D	N	5	9
Y83TMN	K	3	D	N	5	9
YBKVUU	K	3	D	N	5	9
YBP7WR	K	3	D	N	5	9
YDNNPD	K	3	D	N	5	9
YRBVPY	K	3	D	N	5	?
YRQAWB	K	3	D	N	5	9
YT6MVE	K	3	D	N	5	9
YVA8KY	K	3	D	N	5	9
YXWRQ4	K	3	D	N	5	9
YYQ3EY	K	3	D	N	5	9

TABLE 1

Recovered Characters						
WebCode	Character 1	Character 2	Character 3	Character 4	Character 5	Character 6
YZ3CCH	K	3	D	N	5	9
Z3ZA22	K	3	D	N	5	9
Z4UZ8F	K	3	D	N	5	9
Z8YJEN	K	3	D	N	5	9
Z9RGKA	K	3	D	N	5	9
ZAPZZD	K	3	D	N	5	9
ZCB2KQ	K	3	D	N	5	9
ZG3J7B	K	3	D	N	5	9
ZG76JH	K	3	D	N	5	9
ZHHXGQ	K	3	D	N	5	9
ZLEQ8F	K	3	D	N	5	9
ZPFUY2	K	3	D	N	5	9
ZQAK4G	K	3	D	N	5	9
ZTZJHE	K	3	D	N	5	9
ZV4GRL	K	3	D	N	5	9
ZXP2WQ	K	3	D	N	5	9
ZXUCYN	K	3	D	N	5	9
ZY4NBY	K	3	D	N	5	9
ZY6DKM	K	3	D	N	5	9

Response Summary						**Participants: 325**
	Character 1	Character 2	Character 3	Character 4	Character 5	Character 6
	K	3	D	N	5	9
Total	324	322	324	324	324	323
Percent	99.7%	99.1%	99.7%	99.7%	99.7%	99.4%

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
24D76K	The serial number was chemically restored to: K3DN59
26N3EV	The serial number on the bar stock was determined to be K3DN59.
2EB2AA	One (1) steel bar stock with arrow submitted in a small envelope labeled "Test No. 25-5250: D". Serial number defaced by abrasion and smooth polishing. Examiner scribed "25-5250:D" on reverse for identification purposes. The serial number is obliterated. Magnetic Particle Inspection techniques resulted in a full restoration "K3DN59".
2U9YPK	The serial number is ground off. The serial number (K3DN59) was restored by acid etching. Polishing and the Fry's reagent were used for the restoration. A chemical reaction was observed when the acid etching solution was applied to the surface area of the metal plate. Image 1 is an image of the item depicting the defaced number before restoration attempts. Image 2 is an image of the item after the restoration process was completed. ……. Disposition: Item 1 will be forwarded to the Firearm Section's evidence room. Images of the restoration process with be stored on the [Name] Server.
2WVT99	1. Examination of Exhibit 1 revealed it to be a piece of a ferromagnetic bar displaying an area of obliteration. The tool utilized to obliterate Exhibit 1 could not be determined. It does appear that the area of obliteration was polished, possibly with an angled grinder or something similar. These markings are unsuitable for microscopic comparison. Visual and chemical restoration techniques were utilized in an attempt to restore the obliterated characters. The obliterated area was restored, and the following characters were observed: K 3 D N 5 9
2Y3FWR	The above number was abliterated throught mechanically abliterated of metal surface from serial number field.
33GD3U	the metal sheet identified as 1, was procesed with maneto-optical technology and was possible restore the original serial number totally is K3DN59.
33YYGH	Item 1-1 A piece of cold rolled steel bar stock with suspected obliterated serial number.: Visual examinations of this item revealed the presence of grind/polish marks on one side of the bar stock. This area was magnetically processed and etched with acid solutions, and the following was restored: K 3 D N 5 9
363WPP	The obliterated serial number on the Item 1.1 steel bar stock was restored to read K3DN59.
367GHY	The piece of cold rolled steel bar was observed to show alteration in the area where the manufacturer normally prints the series. The restore process was applied and "K3DN59" sequence was restored. It should be noted that the characteristics restored through this process are not permanently and the alteration persists on the surface.
37WFVX	I photographed the packaging and then the items included with this test. I visually looked at the piece of steel and it was smooth. I then used Magnetic Particle Inspection fluid, and it brought up the serial numbers and letters of K3DN59 and it was photographed. I then used Fry's Reagent on a test piece of steel and a positive reaction was recorded. I then used the Fry's Reagent on the sample evidence, and I left it on for 1 minute. I then cleaned it off and did that 2 more times and I was still able to see the serial number which was K3DN59. I photographed it to preserve the results.
3928LP	Examination Results Item 1: A piece of cold rolled steel bar stock with suspected obliterated serial number. Using chemical serial number restoration techniques, an attempt was made to restore the obliterated serial number with the following results: Serial Number: K 3 D N 5 9 was restored on Item 1.
396RDY	The metal piece (Item 1) showed areas of wear and alteration. After applying the restoration process to the obliterated area, the K3DN59 sequence was revealed. It is noted that the revealed characteristics are not permanently restored, and the wear persists on the surface.
3AVW77	Restoration Results 1-1 K3DN59
3AYHJD	The sequence of characters imprinted mechanically was removed only to such a depth that after the acid etching treatment it could be restored.

TABLE 2

WebCode	Conclusions
3ETHVN	The obliterated serial number on the Item 01-01 metal bar was recovered to read K3DN59. The Item 01-02 aluminum standard was not analyzed.
3LPA4H	Examination of Item 1 revealed an obliterated area in the middle of the metal bar. Standard restoration techniques applied to Item 1 revealed the following characters: K3DN59. Multiple factors could have had an effect on the interpretation of the restored characters.
3QGGMQ	The obliterated serial number of Item 1 was restored to read K3DN59.
3QK2EZ	The metal part was observed to show wear and/or alteration in the area where the manufacturer normally prints the series, which could be recovered through the development process. After the development process was applied, the K3DN59 sequence was revealed. It should be noted that the characteristics revealed through this process are not permanently recovered, and the wear persists on the surface.
3VD2TV	The serial number on the center of Item 1 was determined to be "K 3 D N 5 9".
3VEUTN	The serial number was restored to read K3DN59.
47TDJX	Items 1 (alloy steel bar) and Item 2 (Aluminum standard) were photographed. The obliterated area of item 1 was sanded with 220 and 400 grit sandpaper and treated with Fry's chemical reagent, for a total of two times. After each treatment photographs were taken. After the second treatment the alpha-numeric combination was observed (K3DN59). The alpha-numeric combination was photographed and viewed in Adobe.
4AUEPM	The obliterated area was cleaned, polished, and chemically etched. The following full serial number was restored: K3DN59
4CHR96	Serial number restoration results: K3DN59
4DRY9C	Item #1 has an area of obliteration. K3DN59 were restored as the characters.
4ML3LL	The steel block, Item 1, was observed to have an obliterated serial number. The serial number was restored to K3DN59.
4TMEGJ	** FOR THE PURPOSE OF THIS EXERCISE - A FIREARM WAS ELECTED TO BE USED ** Using suitable chemical etching techniques, a serial number was able to be recovered from the firearm on the left side of the receiver. This serial number 'K3DN59' was verified by Sergeant [Name] (Forensic Response Section) on this same date.
4UYWUW	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 number to read as K3DN59. Based on the above examination and finding, I am of the opinion that the original serial number on the piece of cold rolled bar stock is K3DN59.
4VTMZC	The obliterated serial number on the steel bar stock in Item #1 was completely restored by means of chemical etching and found to be K 3 D N 5 9.
4W3RDZ	It is concluded that the development methodology with chemical reagents is more efficient and faster than the electromagnetic methodology.
646ZH8	The obliterated number has been restored by using the etch method with the acid II an IV.
6CY93X	The alphanumeric sequence revealed in the piece of cold rolled steel bar identified as 2025-1817 (Test No. 25-5250 Item 1) corresponds to "K3DN59"
6HJU2R	The serial number of Item 1 was restored to read “K 3 D N 5 9”
6HKEGK	The obliterated area of the steel bar stock from item 1 was examined using magnetic particle inspection, chemically processed, and determined to be K3DN59.
6JFWJL	The serial number was chemically restored to read: K3DN59.
6UDAQR	The obliterated serial number is perceived to be K3DN59.

TABLE 2

WebCode	Conclusions
6UEH2D	An obliterated area was observed on the metal bar in Item 1-1. The characters "K3DN59" were restored.
6XETXD	Standard restoration techniques revealed the characters "K3DN59"
6YQP3H	Serial number restoration techniques were utilized on laboraory exhibit 1 and the following number was developed: K3DN59
74EPW4	A serial number restoration was attempted using physical, magnetic and chemical etching techniques on the steel bar stock. The serial number was restored and observed as: K 3 D N 5 9.
78Z2QM	[No Conclusions Reported.]
7A62TL	The obliterated serial number on the cold rolled steel bar stock, Item 1, was restored to K3DN59.
7BZKYT	The serial number was restored to read K 3 D N 5 9.
7FUJAH	Examinations showed the serial number of Item 1 to be obliterated. The serial number was restored using chemical etching techniques and was found to be: K3DN59.
7HF4EL	The obliterated serial number on item 25-5250E was revisualized with magnetic particle inspection and chemical etching. The restored serial number was observed to be, K3DN59.
7HVM26	Serial number restoration techniques were applied to Item 1. The serial number was determined to be K3DN59.
7JTQYL	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 "K3DN59".
7KLQUC	Restored Characters: K3DN59
7LWQTR	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 K3DN59.
7UBCZA	The section of metal bar stock Q1 (Item 001.001) was visually analyzed and through polishing, magnetic and chemical processes was fully restored to read K3DN59. This report contains examination results that relate only to the items tested and conclusions based on interpretations/opinions of this author. Work began on April 28th, 2025.
7XAFKN	I restored the serial number (SN) on Item 1 to read K3DN59.
7ZF83H	The serial number was restored to read K3DN59.
83HCAB	The serial number was fully restored to K3DN59.
84BU46	[No Conclusions Reported.]
88TPQA	Restoration Results: K3DN59
8F8BZD	Item 1-1 A piece of cold rolled steel bar stock with suspected obliterated serial number.: Visual examination of this item revealed the presence of polish marks on the front side of the steel bar. This area was magnetically processed and etched with acid solutions and the following was restored: K (3,8) D N 5 9 ( ) indicates a possible character due to an incomplete restoration.
8HRHY2	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.
8K36XE	Attempts to restore the obliterated serial number were successful. The restored serial number is K3DN59.
8LC623	1. Examination of Exhibit 1 revealed one piece of ferromagnetic steel bar stock measuring 64.27mm long, 25.40mm wide, and 6.27mm thick. a. There is an obliterated area in the approximate center of the steel bar stock consistent with an abrasive type tool. The specific tool that caused the obliteration is undetermined. The observed toolmarks are unsuitable for microscopic comparison. b. The obliterated area was restored and the following characters were observed: K 3 D N 5 9. All measurements are approximates.

TABLE 2

WebCode	Conclusions
8PDDZ6	The serial number on the piece of metal (Exhibit 1A) was mechanically and chemically treated and restored to read K3DN59.
8PGV8F	The item was described in accompanying documentation as a piece of steel bar. I was requested to examine the steel bar and to restore any erased serial numbers. The steel bar contained a groove where it appeared that some of the metal had been removed. Number restoration techniques were applied to this area and a single line of characters was restored. The characters were " K 3 D N 5 9 ".
8PXW7C	Visual examination and chemical treatment of the serial number area on the front of the bar stock, Item 1.A, reveal the following number: K3DN59. Item 1.B was inspected to verify and document contents. No analysis was performed on the item listed.
8QKTAW	The piece of metal submitted for analysis showed alteration due to wear on the metal surface. After analysis, the series that had been subjected to wear was revealed. The alteration detected may still be noticeable after the analysis is completed.
93EBLG	Using standard laboratory techniques, the obliterated serial number for the steel bar stock was restored to read: K3DN59. The Item 1-2 aluminum standard was not examined further.
96397M	The following result was obtained from the restoration: K3DN59
9989DT	I found filing marks on the plate 'Item1'. Upon electrochemical treatment on filed surface, the number 'K3DN59' was restored. Therefore, I am of the opinion that the obliterated serial number is 'K3DN59'.
9A2YJ8	Item Examinations Item 1 – One portion of metal bar stock with obliterated serial number. Serial Number Restoration Using magnetic and chemical restoration techniques, and attempt was made to restore the serial number on Item 1 with the following results: Serial Number: K 3 D N 5 9 was restored to Item 1.
9D2AE8	Item 1's serial number was chemically restored and found to be "K3DN59"
9DD8KC	The obliterated serial number on the piece of bar stock (Item 1) was magnetically processed and chemically restored to read "K3DN59".
9DXBAK	Examination and processing of the obliterated area of this item restored the original alphanumeric/numeric characters. A Full Restoration was determined to be: K3DN59
9LW894	One block of silver ferrous metal measuring 2 1/2" x 1" wide x 1/4'" thick displaying a 1" x 1 ½" area milled away. Serial number "K3DN59" recovered with chemical etching. [Lab]# 25-[Number] scribed on back for identification.
9NWJXA	The restored characters for Item 1 were K3DN59.
9QNEM4	The item is a portion of a cold rolled steel bar with suspected obliterated serial number. The item was physically and chemically processed. Its serial number was restored to read: K3DN59.
9RYG93	Serial number restoration techniques were applied to Item 1 (metal bar). The serial number was determined to be K3DN59. The interpretation of the data and authorization of the results was performed by the undersigned forensic analyst. Other staff members may have performed laboratory activities concerning evidence associated with this report. For a complete listing of all staff members who performed laboratory activities in this case, please contact the laboratory via the telephone number above.
9U2FN4	The serial number is obliterated. Physical restoration technique resulted in a full restoration "K3DN59".
9U4AZF	Using standard laboratory techniques, the Item 1-1 serial number was restored to read: K3DN59. Item 1-2 was not examined further.
9UK2E7	The serial number is successful recovered with the Regula Forensics tool (K3DN59)
9XQKKE	Chemical etching of the steel plate revealed a sequence of numbers and letters determined to be K3DN59.
9YHM69	Examination of the bar stock in Item #1 revealed an obliterated area. Restoration results: K3DN59

TABLE 2

WebCode	Conclusions
A7D6XQ	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 'K3DN59'. 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 K3DN59.
AE4MCY	Item 1= K3DN59
AGUQ67	The section of metal bar stock Q1 was visually analyzed and through chemical processes was fully restored to read K3DN59. 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 11, 2025.
AH4ZUH	The obliterated serial number on middle of the metal bar, item 1, was restored to K3DN59.
AH6TQ6	The section of metal bar stock Q1 (Item 001.001) was visually analyzed and through magnetic and chemical processes was fully restored to read K3DN59. 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 03/31/2025.
AH9BWF	The steel bar stock, Item 1, was observed to be obliterated. Restoration techniques were used to restore the serial number to "K3DN59".
ANB68B	The obliterated serial number located on the Exhibit 1 steel bar stock was processed. The characters were concluded to be K3DN59.
APNWX8	Restoration Results: K3DN59
ARQYM9	Visual examination and chemical treatment of the serial number area on the bar stock, Item 1.A , reveals the following number: K 3 D N 5 9
AT9E9K	1. The serial numbers of the steel bar stock identify as Item 1 were altered. 2. The recoverd serial numbers of the steel bar stock are: K3DN59
AYT2WF	An obliterated area was found on the center of Item 1. Standard serial number restoration techniques were used to reveal the following characters K3DN59. Item AS was received and noted as a reference standard; but, not further analyzed.
B369QT	Fully restored to read K3DN59.
B3AQPR	Steel bar identified as Item 1 has an obliterated area. By restoration process the alphanumeric sequence "K3DN59" was recovered.
B3DLNK	A combination of polishing and chemical etching was used to restore the serial number on item 1. The serial number was restored to K 3 D N 5 9.
B44GV7	An obliterated area was observed on the metal plate marked Item 1. The obliterated area was magnetically processed and was restored to read the characters "K3DN59".
BAPCWA	The obliterated serial number located on the Exhibit 1 bar stock was processed. The characters were concluded to be K3DN59. No Firearms or Toolmark examinations were requested or conducted on Exhibit 2.
BGB3KQ	After electrochemical analysis, I am of the opinion that the number 'K3DN59" is the number stamped on the metal plate 'Item 1'
BJEPQM	The serial number on Item 1 was physically, magnetically, and chemically processed. It was restored to read K3DN59.
BJTL3Y	The Item 1 obliterated serial number was chemically/magnetically processed and restored to read “K3DN59”.
BUHFUJ	Lab Item 1 with obliterated serial number located in the center of the bar, was chemically/magnetically processed and determined to be "K3DN59"
BVTHGH	Lab Item 1.1 with obliterated serial number, located in the center of the bar, was chemically/magnetically processed and determined to be "K3DN59."

TABLE 2

WebCode	Conclusions
C4F3YK	The piece of cold rolled steel bar was chemically processed. The serial number was restored to read "K3DN59".
C7JT4E	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 "K3DN59".
CCRRKR	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.
CFARZ8	An obliterated area was located on the cold rolled steel stock and the aluminum standard was used to compare any restored characters to a known standard. Serial number restoration on the obliterated area revealed the following characters "K3DN59."
CGNBQX	1) Examination of Exhibit 1 revealed one ferromagnetic steel bar with an obliterated area on the top. a. Damage consistent with an abrasive action tool was observed; however, the type of tool is undetermined. b. The toolmarks are unsuitable for comparison. 2) The obliterated area was restored and the following characters were observed: K 3 D N 5 9. 3) Please see photos for measurements. All measurements are approximate.
CK7FJZ	The obliterated serial number was restored to read: "K3DN59".
CMCU9E	The serial number was restored to read: K 3 D N 5 9
CMURKQ	The steel bar stock shows wear area there were the manufacturer normally stamps serial number that was recovered after process for restoration was applied, obtaining the following characters: K3DN59. It is mportant to note that these characters are not permanet recovered and the wear area remain in the steel bar.
CT44HC	I was able to restore the erased characters on the exhibit metal block (Item 1). They read K 3 D N 5 9.
CTYQQA	After processing the steel bar with proper chemicals (Davis Reagent, Turner's Reagent, and Fry's Reagent) the following characters were observed; K3DN59.
CUTCLL	Bar stock (Item#1) was magnetically/chemically processed. It's serial number was restored to read: K3DN59.
CYK92J	Using magnetic and chemical methods, the obliterated serial number located on the face of Item 001A, was restored to read K3DN59. Item 001B was used for reference.
CYM2UZ	The obliterated serial number was fully restored to read "K 3 D N 5 9" using sand paper, Fry's reagent, and photography.
D27PZB	Item 1 was physically and microscopically examined. The serial number area of Item 1 was prepared and chemically processed. As a result of these actions, the serial number was restored to read “K3DN59”.
D3GPYQ	The alphanumeric sequence of the metal piece was determined to be altered. After analysis, the entire sequence was found to be consistent with the characteristics evaluated in the comparative material. The detected alteration may still be perceptible after the analysis has been performed. In summary: The analyzed piece of metal is completely identifiable despite the alterations detected.
D98XPC	The restored serial number sequence of Item 1 is "K3DN59".
DA3MMD	The serial number on the metal bar, item 1, was restored to read K3DN59.
DBCRZ3	The obliterated serial number on the Item 1 bar stock was chemically processed, restored, and interpreted as "K3DN59".
DFQ64B	The Item 1 obliterated serial number was magnetically and chemically processed and determined to be "K3DN59".
DJ9PPQ	After processing, the serial number was fully restored to read "K3DN59".

TABLE 2

WebCode	Conclusions
DJQGYB	Examinations showed the serial number of Item 1 to be obliterated. The serial number of Item 1 was restored using mechanical polishing, magnetic and chemical etching techniques and was found to be: K3DN59.
DNGQ99	Date Worked 05/06/2025 The serial number is ground off. The serial number (K3DN59) was restored by using magnetic particle inspection and acid etching. Polishing, Magnaflux and the Fry's reagent were used for the restoration. A magnetic reaction was observed when the Magnaflux was applied to the test item. A chemical reaction was observed when the acid etching solution was applied to the test item. Item 1 will be retained in the Firearms Section.
DTGWRK	Defaced Bar Stock (Item #1) was chemically/magnetically processed. Its serial number was restored to read: K3DN59.
E7XC74	Visual examination and chemical treatment of the serial number area on the middle of the bar stock, Item 1.A, reveal the following number: K3DN59. Item 1.B was inspected to verify and document contents. No analysis was performed on the item listed.
EAXM34	Visual examination and chemical treatment of the serial number area on the middle of bar stock, Item 1.A, reveal the following number: K3DN59. Item 1.B was inspected to verify and document contents. No analysis was performed on the items listed.
EF2N6J	Attempts to physically restore the obliterated serial number of Lab Item 1 were successful. The restored serial number is K3DN59.
EFZW9W	The defaced serial number of Item 1 was magnetically and chemically processed to read: "K 3 D N 5 9".
EMKWNA	Item 1 was physically and microscopically examined. The serial number area of Item 1 was prepared and chemically processed. As a result of these actions, the serial number was restored to read K3DN59.
ENZGQE	Utilizing magnetic particle inspection (MPI) and chemical etching the obliterated serial number was restored to read "K3DN59".
EQ2ZVE	The obliterated serial number on Item 1 cold rolled steel bar was chemically restored and interpreted as K3DN59.
ET9E67	K3DN59
EU6VG3	Serial number restoration results: K3DN59
F22AHU	Serial number restoration techniques were applied to the submitted metal bar stock (Item 1). The serial number was determined to be K3DN59.
F4NE7E	Examination and processing of the bar stock, item 1, restored the original, obliterated serial number that was determined to be "K3DN59".
F7RJRT	Serial number restored: K3DN59
F8PMPA	Using standard serial number restoration techniques Item 1 obliterated serial number was restored to be "K3DN59". The Aluminum standard was received, documented, and not analyzed further.
FDR4R4	The following characters were restored: K3DN59
FDYFQF	The serial number on item 1 was restored to read: K 3 D N 5 9.
FE7T9G	The piece of cold rolled steel bar was chemically processed, and the serial number was restored to read "K3DN59."
FL8KLX	A serial number restoration was performed on item 1-1, and the serial number was found to be: K3DN59.
FT6CT8	Lab Item 1 was examined and the area of the serial number, the middle of the bar, was observed to be obliterated by grinding. Using standard chemical restoration techniques, the serial number was restored and determined to be K3DN59.

TABLE 2

WebCode	Conclusions
FVT9CD	The serial number on the "Aluminum Standard" was defaced by an abrasive method. The serial number was restored using the Magnetic Particle Inspection method. "Aluminum Standard" was marked with the [Laboratory] number for identification.
FYTXZT	Restoration Results: 1-1 K3DN59
FZ6QFT	The characters "K3DN59" were restored on the bar stock in Item #1.
G879QY	The section of metal bar stock Q1 (Item 001.001) was visually analyzed and through magnetic and chemical processes was fully restored to read K3DN59. 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 04/24/2025.
G8KRBW	The obliterated serial number was restored to read K3DN59.
GBZ6D6	Examination Resulting From: Collaborative Testing Services, (CTS) Proficiency Testing Exam Start Date: 3/19/2025 Items of Evidence/Items Examined: Case # 25-5250 Sample Pack # SNR1 Item 1: Cold Rolled Steel Bar Stock w/suspected obliterated serial number. Results: The serial number on Item 1 was restored to K3DN59. Verified by/Date: [Name] on 3/19/2025. Evidence disposition: Photographs – Submitted to Quality Administrator [Name] Test Item – Returned to Quality Administrator [Name].
GE37D2	Electromagnetic and chemical processing was applied and the following characters were developed: K3DN59
GEFW4X	The section of metal bar stock Item #1 was visually analyzed and through chemical processes was fully restored to read K3DN59. 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 March 20, 2025.
GJUA87	The obliterated serial number from Item 1.1 was processed and fully restored to: K 3 D N 5 9
GJUXGC	After it was determined that the area was ferrous (magnetic), the appropriate chemical etchants to include Davis, Turner, and Fry reagent, as well as MagnaFlux were utilized in an attempt to visualize the obliterated characters. Through examination and processing, the obliterated serial number was fully restored to read “K3DN59".
GLL9L4	The obliterated area located on the Exhibit 1 bar stock was processed. The characters were concluded to be K3DN59.
GMFA98	Conclusion: The alphanumerical serial number stamped on the cold rolled steel bar stock was revisualised as “K3DN59”.
GQEL68	An electromagnetic yoke and Black Magnetic Ink were used for magnetic particle inspection on the steel bar. This method successfully revealed six previously obscured characters – K3DN59 - on the surface. The inspection demonstrated the effectiveness of magnetic particle testing using visible magnetic ink for detecting surface indications on ferromagnetic materials.
GTYEYM	Interpretation: The alphanumeric sequence of the metal piece was determined to be altered. After analysis, the entire sequence was found to be consistent with the characteristics evaluated in the comparative material. The detected alteration may still be perceptible after the analysis. In summary: The analyzed metal piece is fully identifiable despite the alterations detected, as indicated in the table above in the Final Sequence Determined column. [Table not submitted.]
GWHEE3	Serial Number Restoration Lab Item(s)# Restoration Results 1 K3DN59. [Participant submitted data in a format that could not be reproduced in this report.]
GXDXG4	The obliterated serial number on Item 01 (bar stock) was chemically restored and determined to be K3DN59.
GZH94E	Using chemical and magnetic methods, the suspected obliterated serial number on Item 001A was restored to read K3DN59.
H8YC47	The serial number was erased. I was able to restore the serial number which read K3DN59.
HCRHD3	Serial Number Restoration Labt Item(s): #1 Restoration Results: K3DN59

TABLE 2

WebCode	Conclusions
HG6QUU	The serial number on the cold rolled steel bar was fully restored to K3DN59.
HJTWY4	The serial number is ground off. The serial number (K3DN59) was restored by magnetic particle inspection and acid etching. Polishing, Magnaflux and the Fry's reagent were used for the restoration. The magnetic particles provided an outline of the serial number when the Magnaflux was used. A chemical reaction was observed when the acid etching solution was applied to the surface area of the firearm. This Evidence Submission will be held in the Firearm Section's Evidence Room.
HQC3XV	Restoration of obliterated stamped marking was performed on the questioned surface of the Item 1, and the restored serial number was found to be “K 3 D N 5 9”.
HQDVUH	I found filing marks on the plate 'Item 1'. Upon electrochemical treatment on the filed surface, number 'K3DN59' was restored. Therefore, I am of the opinion that the obliterated serial number is 'K3DN59'.
HV464G	Attempts to physically and chemically restore the obliterated serial number of Lab Item 1 were successful. The restored serial number is K3DN59. The alpha-numerics present on Lab Item 2 were utilized as reference material for the serial number restoration performed on Lab Item 1.
HZZTH3	The Item 1 obliterated serial number, located on the center of the bar, was magnetically/chemically processed and restored to read “K3DN59”.
J32GCJ	The piece of cold rolled steel bar stock is applied the procedure "Restoration of alphanumeric sequences or other impressions on firearms or similar, version 14" and the alphanumeric sequence is obtained K3DN59.
J3XWKA	The serial number of Submission 1 as restored is K3DN59.
JAKMAP	Restoration Results: K3DN59
JJL6KT	The serial number on the piece of metal (Exhibit 1A) was mechanically and chemically treated and restored to read K3DN59. No analysis was performed on the piece of metal (Exhibit 1B).
JTG3F9	Mechanical and chemical processing of the submitted obliterated steel bar revealed that the original serial number is K3DN59.
JTTP6A	Evidence Description Item Description/Visual Examination 1 A 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: K3DN59 was restored on Item 1. Methods Physical, Visual Physical and Chemical Serial Number Restoration Technical Review Completed By: (redacted by tester) Verification Completed By: (redacted by tester) Evidence Disposition All items in the Evidence Description will be returned to the submitting agency unless otherwise noted. [Participant submitted data in a format that could not be reproduced in this report.]
JTWAXJ	The serial number of the piece metal identified item 1 is K3DN59.
JU92U7	Serial Number Restoration Analysis: Methodology: Physical (Visual Examination) Microscopy (Stereo/Comparison Microscopy) MPI - Magnetic Particle Inspection Serial number restoration procedures revealed the serial number on Item 1, the stainless steel bar stock, to be: K 3 D N 5 9. [Participant submitted data in a format that could not be reproduced in this report.]
JVJ4F6	The serial number of the piece of cold rolled steel bar stock, Exhibit ITEM 1, was restored and observed to be "K3DN59".
JX4XBK	The surface in the metal piece was determined obliterated. After the analysis an alphanumeric sequence was revealed concordant with the characteristics evaluated in the comparative material
KACZ83	The obliterated serial number on the bar stock marked #1 was examined and chemically processed and restored to read "K3DN59"
KAY9G7	The serial number on the metal bar (Item 1) reads: K3DN59.
KAZ7R3	Item 1, one (1) piece of cold rolled steel bar stock with suspected obliterated serial number, was examined and processed with Magnaflux and acid etching chemicals for restoration of the serial number. The serial number was restored as: K3DN59.

TABLE 2

WebCode	Conclusions
KDYJC7	The serial number of the Item 01-01 bar stock was restored to read, “K3DN59.”
KE8U64	Visual examination with mechanical and chemical processing of the piece of metal (Item 1) revealed the obliterated serial number to read: K3DN59.
KF6PK8	The cold rolled steel bar stock, Item #1, was received in the laboratory with an obliterated serial number. Attempts to raise the serial number via chemical methods yielded the following serial number: K3DN59. All evidence will be returned to the Firearms Unit Vault upon completion of analysis.
KF6ZRR	Magnetic particle inspection methods resulted in a full restoration "K3DN59".
KGDGH9	the restored serial number is K3DN59
KMK968	The piece of cold rolled steel bar stock, Item #1, was received by the laboratory with an obliterated serial number. Attempts to restore the serial number utilizing chemical methods were successful and the serial number was determined to be K3DN59.
KRWQ72	The bar stock obliterated serial number, located in the center of the bar stock, was chemically processed and restored to read "K3DN59".
KTRA93	Item #1 (piece of cold rolled steel bar stock) was chemically processed. Its serial number was restored to read: K 3 D N 5 9.
KU747B	The serial number was restored to read "K3DN59".
KVETD8	The obliterated serial number on Item 1 was examined microscopically, magnetically processed, and chemically restored to read K3DN59.
KY2X4C	The serial number revealed with an acid etching process is : K3DN59
KZRQME	CTS Item 1 piece of metal is consistent with being steel. Physical and chemical treatments of the obliterated area revealed the following number: K3DN59.
KZTGX4	I chemically treated the surface of the cold rolled steel bar stock that was listed as item 1. As a result, I recovered the previously stamped characters 'K3DN59'. These characters were consistent in size and style to the characters provided on the Aluminium Standard.
L6EZ9X	Standard restoration techniques revealed the following characters on Item #1, "K3DN59".
L93CAN	Restoration results: K3DN59
LDVEB3	Visual examination with chemical processing of the steel bar stock (Item 1) revealed the obliterated serial number to read: K3DN59. Evidence examined for this report will be returned to the [Location] Police Department's Crime Lab Quality Assurance Coordinator.
LGRZ36	The obliterated serial number on the piece of bar stock in item A1-1 was partially restored and found to be K-*-D-N-5-9. The asterisk represents a 3 or a J.
LGVKUE	The serial number restoration technique was applied to Item 1. The restored serial number was determined to be K3DN59.
LHMJ9D	Examination and chemical processing of [laboratory] Item 001 restored the original obliterated serial number which was determined to be K3DN59. The requesting agency will be responsible for entering the serial number into the National Crime Information Center (NCIC) Stolen Gun Files.
LKYEU6	The serial number was restored to read K3DN59.
LMG7T8	Examination and restoration of the serial number located on the middle of bar stock of Item 1 revealed the serial number “K3DN59”.
LQHEC3	The serial number had been erased. I was able to restore the serial number to read K3DN59.
LW84NZ	Examination and restoration of the serial number on Item 1 (a piece of bar stock) revealed the following characters: "K3DN59".
LYBMG9	The obliterated serial number was fully restored as K3DN59
M43KEW	The following characters have been restored "K3DN59"

TABLE 2

WebCode	Conclusions
M4KZY8	Conclusion: A full serial number restoration was obtained from the metallic bar, described as item 1. The serial number obtained with the restoration process is K3DN59, which corresponds to the size, shape and positioning of the alphanumeric characters engraved on the metallic bar used as the standard.
M6UJRU	Serial Number Restoration Lab Item # Restoration Results 1 K3DN59. [Participant submitted data in a format that could not be reproduced in this report.]
M76JPP	The serial number on the metal blank (Exhibit 1) was mechanically treated and restored to read K3DN59.
MDMHAB	The serial number on Property Item 1 was chemically, magnetically, and physically processed to restore the serial number. The serial number was restored to read K3DN59.
MKQVZY	Ther serial number is milled off. The serial number (K3DN59) was restored by polishing, acid etching and magnetic particle inspection. A reaction was observed when using acid etching. The serial number was restored using 25% Nitric Acid. Magnetic particle inspection was used but did not yield any better results. This item will be stored in the Firearm Section's Evidence Room.
MNLRN4	The serial number of the metal bar was fully restored and determined to be K3DN59. The metal bar was examined and the serial number was determined to have been obliterated. Using standard restoration techniques, the obliterated area was magnetically and chemically restored.
MY9NQQ	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 "Wazau" was carried out. Through the process with the magneto optical device, the following numbers/letters were made visible: "K3DN?9". The question mark stands for an ambiguous position. The etching process made the following numbers/letters visible: K3DN59".
NDN3Q4	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 "K3DN59".
NEYQ8U	Lab Item #1: Restoration Results: K3DN59
NLJC99	After using the acidic restoration method on steel, the serial number obtained is as follows: K3DN59.
NMRYTL	Results: Serial Number Restoration Lab Item(s)# Restoration Results 1 K3DN59. [Participant submitted data in a format that could not be reproduced in this report.]
NP3W73	Magnetic particle inspection revealed the Item 1 serial number to be K3DN59.
NQRBNL	Restoration results "K3DN59"
NWW9WP	SPECIMENS: 1-1 A steel bar: labeled "TEST NO. 25-5250", "Sample Pack: SNR1", and "Item 1" 1-2 An aluminum bar: labeled "TEST NO. 25-5250", "Sample Pack: SNR1", and "Aluminum Standard" FINDINGS & OPINIONS: Item 1-1 was submitted with an obliterated serial number. Magnetic restoration techniques were used to restore the serial number. The serial number was restored and found to be: K 3 D N 5 9. No examinations were performed on the aluminum bar, item 1-2.
P33PY7	I restored the serial number on item 1 to K3DN59.
P4DZ63	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 "K3DN59".
P4FW8L	Serial number restoration techniques were applied to Item 1 (bar stock). The serial number was determined to be K3DN59.
PGYE2B	Examinations showed the serial number of Item 1 to be obliterated. The serial number of Item 1 was restored using chemical etching techniques and was found to be: K3DN59. The procedure was photographed and documented accordingly.
PUBPRL	Standard laboratory procedures for restoring serial numbers stamped in metal have been employed on the center of this bar stock. The serial number was determined to be "K3DN59".

TABLE 2

WebCode	Conclusions
PVH62D	the restoration procedure was applied to the cold rolled steel bar stock and the alphanumeric sequence K3DN59 was obtained
PWBV7R	Examination and chemical processing of the obliterated serial number located on the piece of metal was restored and determined to be "K3DN59".
PYKVCY	A chemical etching process was used on the metal plate (Item 1) to restore a serial number which was identified as being K3DN59
Q3EJYJ	The following characters were restored on Item 1: K3DN59
Q8BDBL	A request has been made to determine whether or not a suspected obliterated serial marking could be recovered. The serial marking appears to have been removed from one side of the metal block. After using the electromagnetic and chemical process, the serial marking has been identified as K3DN59.
QAJZVY	Using standard laboratory techniques, the Item 1-1 serial number located in the middle of the steel bar stock, was restored to read: K3DN59. Item 1-2 was not examined further.
QGFKR8	Visual examination and chemical treatment restored the obliterated serial number on Item 1 to read "K3DN59".
QHALZW	Item 1 was examined and found to exhibit an obliterated area in the center of the bar stock. As the result of magnetic particle inspection and the application of chemical etchants, the following serial number was revealed: K3DN59. The above analysis began on 03/25/2025.
QKE9D2	The obliterated serial number area on item SNR1 was examined and treated with chemicals. The serial number on item SNR1 was restored to "K3DN59".
QKG2AN	After application of acid solution we were able to reveal the following caracters : K3DN59
QKJJFZ	Serial Number Restoration Analysis: Methodology- Physical (Visual Examination) Microscopy (Comparison Microscope) Magnetic Particle Inspection Serial number restoration procedures revealed the serial number on Item 1, the bar stock, to be: K 3 D N 5 9. [Participant submitted data in a format that could not be reproduced in this report.]
QPCM8K	ONE SILVER METAL OBJECT (MO-1), CONSISTENT WITH FERROUS METAL BAR STOCK. SERIAL NUMBER OBLITERATED BY AN UNKNOWN METHOD; HOWEVER, MO-1 DISPLAYS DEEP MILLING MARKS ON THE OBLITERATED AREA. SERIAL NUMBER RESTORED USING A COMBINATION OF POLISHING, CHEMICAL ETCHING TECHNIQUES, AND THE USE OF MAGNETIC PARTICLE INSPECTION (MAGNAFLUX). SERIAL NUMBER OF K3DN59 SUCCESSFULLY RECOVERED. MO-1 MARKED WITH CASE NUMBER "25-5250A" FOR IDENTIFICATION.
R2YJFU	Date Worked 05/08/2025 The serial number was ground off. The serial number (K3DN59) was restored by acid etching. Polishing and the Fry's reagent were used for the restoration. A chemical reaction was observed when the acid etching solution was applied to the surface area of the firearm. Item 1 will be forwarded to the Property Custody Division.
R4MVGK	The obliterated serial number was restored and can be read as follows: K3DN59.
R4PDMW	I conducted an examination of a cold rolled steel bar stock with suspected obliterated number. A visual inspection was conducted using light however no characters were observed. The metal plate was subjected to a serial number restoration technique and a full recovery of the characters 'K 3 D N 5 9' was obtained. The recovered characters compared favourably to the alphanumeric characters on the aluminium standard bar stock supplied.
R84BTX	Positive. The recovered serial number was: K3DN59
RJJAET	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: K3DN59 Evidence disposition: Photographs retained in Forensics Division CTS Item(s) – Retained in Forensics Division End of Report for [Laboratory] Case # 25-5250

TABLE 2

WebCode	Conclusions
RJKZPK	A physical / magnetic / chemical (Fry's, Acidic Ferric Chloride) serial number procedure was conducted on the above described evidence (item 1) on 4/30/2025 with the following results: The defaced serial number on Item 1 was restored to read: K 3 D N 5 9
RQDBV8	Examination and chemical processing of Item 1 restored the original obliterated serial number, which was determined to be "K3DN59".
RTNXRZ	The obliterated serial number on Item 1 was examined microscopically, magnetically processed, and chemically restored to reveal K3DN59.
RTRHJA	On the examination, I found that there were filing mark on the cold rolled steel bar stock "Item 1" that bearing no alphanumerics. On electrochemical treatment, a set of alphanumerics read as "K3DN59" was restored. Hence, I am of the opinion that, the number of the cold rolled steel bar stock "Item 1" was tempered and restored and read as "K3DN59".
RW6ETJ	One (1) ferrous bar stock submitted in coin envelope marked "TEST NO 25-5250: E" Serial number defaced by abrasion. The serial number is obliterated. Physical and chemical restoration resulted in a full recovery of the serial number: "K3DN59".
T4GXJU	The obliterated serial number on Item 001-01 was restored to read K3DN59.
T783F8	I concluded the suspected obliterated serial number to consist of the six (6) characters, K3DN59.
T9FEVN	Standard restoration techniques restored the following characters on Item #1: K3DN59
TD9GYN	An obliterated area was observed on metal bar in Item 1-1. The characters "K3DN59" were restored.
TE6UMG	Lab Item(s)# 1 Restoration Results K3DN59
TH2FDJ	The serial number on the piece of metal (Exhibit 1A) was mechanically treated and restored to read K3DN59. No analysis was performed on the piece of metal (Exhibit 1B).
TMU6P4	[No Conclusions Reported.]
TQTW3M	Restoration techniques applied to the steel sample provided "item 1" revealed a serial number consistent with the following sequence: K3DN59
TTKVGL	Using standard serial number restoration chemical techniques, the obliterated serial number on item 1-1-1 (CTS Item 1) was restored to read: K3DN59.
TVNQZN	A piece of steel bar stock was received with an apparent obliterated area. Upon restoration, the following characters were recovered; " K 3 D N 5 9 "
TXFAW4	The stamped serial number on the steel base was removed by mechanical sanding of the 0.25mm thick metal surface layer. The serial number was restored by chemical corrosion etching of the metal and had the following original content: K3DN59.
TXZHYX	Submission 001-001 was submitted for serial number restoration. Submission 001-001 was examined and found to have an obliterated serial number. Physical and chemical processing of the submitted piece of cold rolled steel bar stock restored the serial number to read K3DN59.
U4GLTZ	The serial number of the steel bar, Exhibit ITEM 1, was restored and observed to be K3DN59.
U8D2P8	The piece of metal, internally identified as E1-25-1803, showed alteration in the area where the print was located, which could be recovered through the restoration process. After applying the development process, the sequence K3DN59 was revealed.
U8GWPZ	The obliterated number on Item #1 was polished and chemically restored to reveal the serial number K3DN59.
U98RVL	Serial number restoration was performed on item 001.001. The serial number K3DN59 was restored on item 001.001.
UBE6JG	One (1) ferrous piece of bar stock. Dimensions of 2.5" x1" x 0.25" (LxWxH). Questioned serial number obliterated through cutting / abrasion. No characters visible as received. Magnetic particle inspection resulted in a full restoration of "K3DN59". CTS number "25-5250F" scribed on reverse for identification.

TABLE 2

WebCode	Conclusions
UBVUU2	Restoration of obliterated marks, using acid solution, allows to read following marks : K3DN59
UD2RAG	We succeed to restore the serial number as : K3DN59
UDM6YU	Item 1 was physically examined and microscopically examined. The serial number area was prepared and treated with chemical reagents. As a result of these actions, the serial number was restored to read "K3DN59."
UEWACH	The serial number on Item 1 was restored and determined to be the following: K 3 D N 5 9.
UGN4B9	It was observed that the piece of metal was altered and its serial was obliterated in the area where the manufacturer usually prints. Through the process restoration it was recovered the serial K3DN59. However, it should be noted that the features uncovered through this process are not permanently restored, and the wear on the surface remains.
ULFF9P	Item 1 Restoration Results K3DN59
UN7RRV	Positive. The restored serial number was: K3DN59
V29KWE	1. Examination of Exhibit 1 revealed it to be one ferromagnetic metal bar with an obliterated surface on one side. a. Metal bar measured 64.20 mm long, 25.37 mm wide, and 6.27 mm thick. b. The obliterated area appears to have been produced by a machining process. No toolmarks suitable for comparison present within the obliterated area or elsewhere on the metal block. b. After restoration of the obliterated area on Exhibit 1, the following characters were observed: K 3 D N 5 9. All measurements are approximate. TECHNICAL NOTES: Serial number restoration is dependent upon multiple factors to include the original stamping/engraving method, material type, obliteration method, and depth of material removed. The reported characters convey only the appearance of characters or partial characters that the examiner observed after the application of standard serial number restoration techniques. These characters are not considered absolute to the exclusion of other possible characters with similar shape or form.
V63LUL	Attempts to restore the obliterated serial number of Item 1 were successful. The restored serial number is K3DN59.
VN2GPX	Evidence Description Item 1: A piece of cold rolled steel bar stock with suspected obliterated serial number. Examination Results Using chemical serial number restoration techniques, an attempt was made to restore the obliterated serial number with the following results: Serial Number: K 3 D N 5 9 was restored on Item 1. Methods Chemical Serial Number Restoration Technical Review Completed By: [Name] Evidence Disposition All items in the Evidence Description will be returned to the submitting agency unless otherwise noted. [Participant submitted data in a format that could not be reproduced in this report.]
VN62G8	Steel bar identified as Item 1 has an obliterated area. By restoration process the alphanumeric sequence K3DN59 was recovered. It should be noted that the characteristics revealed by this process are not permanently recovered and wear persists on the surface.
VRG9FQ	The serial number K3DN59 was restored on the bar stock, this should be considered the complete serial number.
VRHCKG	The obliterated serial number was fully restored to read "K 3 D N 5 9" using sand paper, Fry's reagent and photography.
VUNWB3	No results were found. Different methods was used like Etching acids i.e.: Ferric Chloride and Distilled water. The standards fry's reagent was not used as it was not available.
VWWKVF	Standard laboratory procedures for restoring serial numbers stamped in metal have been employed on the surface of this metal bar. The serial number was determined to be "K3DN59".
VXM973	A serial number restoration was attempted using magnetic particle inspection and chemical etching techniques on the steel bar stock. The characters were observed as K3DN59.
W3WEBT	The obliterated area on item 1 was physically and chemically restored to read: K 3 D N 5 9. An aluminum block with numeric and alpha characters was received and used as a reference standard.

TABLE 2

WebCode	Conclusions
W49VN7	It was observed that there was wear and/or alteration in areas where the manufacturer printed the sequence, which could be recovered through the development process. After the development process was applied, the K3DN59 sequence was revealed. It should be noted that the characteristics revealed through this process are not permanently recovered, and the wear persists on the surface. (*)
W66BWW	[No Conclusions Reported.]
W684RJ	The defaced serial number on the piece of "cold rolled steel bar stock" (Item: 1) was restored to read "K3DN59".
WCLYGQ	It is my opinion that serial number K3DN59 was previously stamped into the cold rolled steel bar stock contained in Sample Pack SNR1. This recovery compared favourably to the alpha-numeric characters stamped into the aluminum standard also supplied within the sample set.
WGVRHW	Utilizing magnetic particle inspection (MPI) and chemical etching, the obliterated serial number was restored to read "K3DN59."
WJ4EZN	Item 1 was received with an obliterated area in the middle of the bar stock. Standard restoration techniques revealed the following characters: "K3DN59". Multiple factors could have had an effect on the interpretation of the restored characters.
WKHW4U	The obliterated serial number was successfully restored to read K3DN59.
WM3VDH	The hypothesis that the serial number is K 3 D N 5 9 is strongly supported
WP7NA2	[No Conclusions Reported.]
WXNXVD	K3DN59
WXNZKG	An apparent number had been removed from the item 1 steel plate. Attempts were made to restore the number. The following number was restored: K3DN59.
X924ZY	The obliterated serial number located on the marked area of the Item #1 bar stock was mechanically and chemically processed and restored to read "K3DN59".
X9KQWV	Based on my finding, I am of the opinion that the steel bar was tempered and after electrochemical restoration process, the serial number was restored and read as K3DN59.
XB4CD3	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, "K3DN59"
XQHKCK	Attempts were made to recover the obliterated serial number on the piece of steel bar stock (Item 1) utilizing chemical and magnetic analysis of the serialized metallic surface area. The restored serial number was determined to be K3DN59.
XTN9RB	Lab Item(s)#: 1 Restoration Results: K3DN59
XYA22P	The area of the serial number was observed to be obliterated by grinding. Using standard chemical restoration techniques, an attempt to restore the serial number was made. The serial number was restored and was determined to K3DN59.
Y83TMN	The obliterated serial number on the Item 1 bar stock was restored to read K3DN59 by using the chemical etching and Magnaflux methods.
YBKVUU	The obliterated serial number on the face of the ferrous bar, item 25-5250H, was restored to K3DN59.
YBP7WR	The serial number on the steel bar stock (Item 1) is K3DN59.
YDNNPD	The serial number on the piece of steel bar stock (Exhibit 1A) was mechanically and chemically treated and restored to read K3DN59. No analysis was performed on the aluminum bar stock standard (Exhibit 1B).

TABLE 2

WebCode	Conclusions
YRBVPY	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: K3DN5?(could be 9 or 8) REMARKS: A question mark denotes the position of an unknown character and may have possible character choice(s) listed below. [List not provided.]
YRQAWB	1. Examination of Exhibit 1 revealed one ferromagnetic metal bar measuring 64.23 mm long, 25.33 mm wide, and 6.23 mm thick with an obliterated area in the approximate center. a. The obliterated area of Exhibit 1 measures 39.41 mm long, 25.33 mm wide, and 5.96 mm thick. b. Exhibit 1 displayed damage consistent with that caused by an abrasive type tool. The specific tool was not determined. The toolmarks observed on Exhibit 1 were not suitable for microscopic comparison. c. The obliterated area of Exhibit 1 was restored, and the following characters were observed: K 3 D N 5 9. Please note all measurements are approximate.
YT6MVE	The obliterated serial number was restored and can be read as follows: K3DN59.
YVA8KY	Attempts to physically restore the obliterated serial number of Lab Item 1 were successful. The restored serial number is K3DN59.
YXWRQ4	Examination results: very strong evidence of the serial number being K3DN59
YYQ3EY	[No Conclusions Reported.]
YZ3CCH	Restoration Results: K3DN59
Z3ZA22	After applying the restore process, the reveal sequence K3DN59 will be obteined
Z4UZ8F	Serial number restoration was performed on the item 001.001 piece of metal. The serial number K3DN59 was restored.
Z8YJEN	I treated the affected area on Item 1 using the Magnetic Particle Inspection Method and re-visualised the characters "K 3 D N 5 9".
Z9RGKA	The serial number on Item 1 was restored to read K3DN59 after sanding and magnetic particle inspection.
ZAPZZD	for solving the CTS, two methods has been used. one is destructive and the other is non destructive. NON DESTRUCTIVE METHOD: Magnaflux spray 7HF has been used in this method. Firstly, the surface was polished and sanded using the Dremer tool. then it was cleaned with acetone to remove any small debris that could effect the result. lastly, magnflux was spread on the metal block. The required result was found after repeating the above steps multiple time. DESTRUCTIVE METHOD: Serchie master restoration kit is used in this process. The surface was firstly cleaned by surface cleaner that was present in the kit. Then chemical gel for steel was applied several time to reveal the numbers permanently. As soon as the numbers were revealed, the surface was wiped and cleaned using acid neutraliser.
ZCB2KQ	The obliterated serial number was restored to read K3DN59
ZG3J7B	Examination of the steel bar in Item #1 revealed an obliterated area. Standard restoration techniques revealed the following characters: "K3DN59"
ZG76JH	The restored characters appear in a chart under serial number restoration results
ZHHXGQ	Item 1 was physically and chemically processed to attempt to recover the serial number. The serial number was recovered as K3DN59.
ZLEQ8F	The serial number appeared to have been deliberately obliterated through grinding. I used magnetic particle inspection, polishing, and chemical etching techniques to restore the serial number to K3DN59.
ZPFUY2	It was observed that the metal piece showed wear in the area where the series is normally printed, which could be recovered through the development process. After the development process was applied, the K3DN59 sequence was recovered. It should be noted that the characteristics revealed by this process are not permanently recovered and wear persists on the surface.

TABLE 2

WebCode	Conclusions
ZQAK4G	Examination of Item 1 revealed an obliterated area on the steel bar stock. Standard restoration techniques revealed the following characters "K3DN59".
ZTZJHE	I found filing marks on the steel bar 'Item 1' upon electrochemical treatment on the filed surface, the number K3DN59 was restored. Therefore, I am of the opinion that the obliterated serial number is K3DN59.
ZV4GRL	Serial Number Restoration Results Examination, magnetic processing, and chemical processing of the Item 1 bar stock restored the original obliterated serial number which was determined to be 'K3DN59'. Methodology The following methodologies were used in the examination of this case: Visual Examination Physical Examination Physical Processing Magnetic Processing Chemical Processing
ZXP2WQ	Lab Item #1 (cold rolled steel bar stock) was examined on 04/04/2025 and found to contain an area of obliteration with overlapping linear signatures. Serial number restoration commenced and was completed on 04/04/2025. Serial number restoration was successful. The serial number on Lab Item #1 (cold rolled steel bar stock) was recovered as: K3DN59.
ZXUCYN	The serial number had been erased. I was able to restore the serial number, which read K3DN59.
ZY4NBY	Item SNR1-C-A: The serial number was restored to read K 3 D N 5 9. The following item was not tested. Item SNR1-C-B
ZY6DKM	A magnetic particle inspection method and chemical etching process was undertaken on the metal plate (Item 1). This revealed that the obliterated serial number was K3DN59.

Sample Preparation

(listed in order of use)

TABLE 3

Sample Preparation			
WebCode	**Method**	**Tool Used**	**Grit Size**
24D76K	Visual	Stereoscope	
26N3EV	None		
2EB2AA	Visual		
2U9YPK	Polishing	Rotary Tool	
2WVT99	Visual	Stereoscope	
	Sanding	Sand paper	400
2Y3FWR	Grinding	Dremel	
	Polishing	Dremel	
33GD3U	Cleaning		
33YYGH	Visual	Microscope	
363WPP	Polishing	Dremel	
	Polishing	Sand paper	1200
367GHY	Cleaning	Acetone	
37WFVX	Visual		
3928LP	None		
396RDY	Sanding	Sand paper	400
3AVW77	None		
3AYHJD	Visual	Stereoscope	
	Cleaning	Acetone	
3ETHVN	Polishing	Dremel	
3LPA4H	Visual	Stereoscope	
3QGGMQ	None		
3QK2EZ	Cleaning	Acetone	
3VD2TV	None		
3VEUTN	Polishing	Dremel	
47TDJX	Sanding	Sand paper	220 and 400
4AUEPM	Visual	Stereoscope	
	Cleaning	water/chem wipe	
	Polishing	Dremel	600
4CHR96	Visual	Stereoscope	
	Polishing	Dremel	
4DRY9C	Polishing	Dremel	
4ML3LL	None		
4TMEGJ	Visual	Torch light / room lighting	
4UYWUW	None		

TABLE 3

Sample Preparation			
WebCode	**Method**	**Tool Used**	**Grit Size**
4VTMZC	None		
4W3RDZ	Polishing		600 grain
646ZH8	None		
6CY93X	Sanding	Sand paper	80
6HJU2R	None		
6HKEGK	Polishing	Polishing blocks	
6JFWJL	Polishing	Sand paper	1000
6UDAQR	Visual	Stereoscope	
	Grinding	Dremel	
	Polishing	Dremel	
6UEH2D	Visual	Stereoscope	
6XETXD	None		
6YQP3H	None		
74EPW4	Visual		
	Visual	Stereoscope	
	Sanding	Sand paper	1200
78Z2QM	Cleaning	papertowel	
7A62TL	Visual	Stereoscope	
7BZKYT	None		
7FUJAH	None		
7HF4EL	Visual	Stereoscope	
7HVM26	Visual	Stereoscope	
7JTQYL	Visual	Stereoscope	
	Sanding	Sand paper	800
7KLQUC	None		
7LWQTR	Visual	Microscope	
	Polishing	Dremel	425 Wheel
7UBCZA	Polishing	Dremel	
7XAFKN	Visual		
7ZF83H	Polishing	Emery paper	
	Polishing	Rubber wheel	
83HCAB	Polishing	Dremel	
84BU46	Cleaning	Ethanol	
88TPQA	Visual	Stereoscope	
8F8BZD	Visual	Stereoscope	
8HRHY2	Sanding	Sand paper	600
8K36XE	None		
8LC623	Visual	Microscope	

TABLE 3

Sample Preparation			
WebCode	**Method**	**Tool Used**	**Grit Size**
8PDDZ6	None		
8PGV8F	Sanding	Sand paper	1200
8PXW7C	Sanding	Sand paper	100
8QKTAW	Sanding	Sand paper	600
93EBLG	Visual Polishing	Stereoscope table buffer/grinder wheel	
96397M	Cleaning		
9989DT	Cleaning	Acetone	
9A2YJ8	Visual	Stereoscope	
9D2AE8	None		
9DD8KC	Visual		
9DXBAK	Sanding	Sand paper	180
9LW894	Polishing	Rotary Tool	
9NWJXA	Polishing	Dremel	
9QNEM4	Polishing	Dremel	
9RYG93	Polishing	Dremel	
9U2FN4	Visual	Stereoscope	
9U4AZF	Polishing	Dremel	Extra Fine
9UK2E7	Polishing	Emery paper	1200
9XQKKE	Polishing	Sand paper	1200
9YHM69	Visual Polishing	Naked eye Dremel	
A7D6XQ	None		
AE4MCY	None		
AGUQ67	None		
AH4ZUH	Visual	Eyes	
AH6TQ6	None		
AH9BWF	None Polishing	Stereoscope Dremel	
ANB68B	Visual Polishing	Stereoscope Dremel	
APNWX8	Polishing	Dremel	
ARQYM9	Sanding	Sand paper	150
AT9E9K	Cleaning	Thinner	
AYT2WF	Visual	Stereoscope	
B369QT	None		
B3AQPR	Polishing	Sand paper	400 and 1000

TABLE 3

Sample Preparation			
WebCode	**Method**	**Tool Used**	**Grit Size**
B3DLNK	Sanding	Sand paper	220
B44GV7	Visual	Stereoscope	
BAPCWA	Visual		
BGB3KQ	Visual	Stereoscope	
BJEPQM	Visual		
BJTL3Y	Visual		
BUHFUJ	None		
BVTHGH	Polishing	Dremel	
C4F3YK	Visual	Stereoscope	
C7JT4E	Cleaning	Acetone	
CCRRKR	Polishing	Sand paper	600 gritwater sandpaper wasused
CFARZ8	Visual		
CGNBQX	Visual	Microscope	
CK7FJZ	Visual	Stereoscope	
	Sanding	Sand paper	1000, 1500, 2000, 2500
	Polishing	Sand paper	2500 with WD40
CMCU9E	None		
CMURKQ	Visual	magnet	1000
CT44HC	Polishing	Emery paper	Superfine (1500+)
	Polishing	Automotive polishing paste	
	Cleaning	Acetone	
CTYQQA	Polishing	Steel wool	
CUTCLL	Visual	Stereoscope	
CYK92J	None		
CYM2UZ	Sanding	Sand paper	80, 280, 400, 1000
D27PZB	Polishing	Steel wool	
D3GPYQ	Sanding	Sand paper	1000
D98XPC	Cleaning	Ethanol	
DA3MMD	None		
DBCRZ3	Visual	Stereoscope	
DFQ64B	Polishing	Dremel	
DJ9PPQ	Polishing	Dremel	
DJQGYB	Visual	Stereoscope	
	Polishing	Dremel	
DNGQ99	Polishing	Rotary Tool	
DTGWRK	Visual	Stereoscope	

TABLE 3

Sample Preparation			
WebCode	**Method**	**Tool Used**	**Grit Size**
E7XC74	Sanding	Sand paper	150-C
EAXM34	Visual	Stereoscope	
EF2N6J	None		
EFZW9W	None		
EMKWNA	Visual	Stereoscope	
	Sanding	Sand paper	320
ENZGQE	None		
EQ2ZVE	Polishing	Rotary Tool	
ET9E67	None		
EU6VG3	Visual	Eyes	
F22AHU	Cleaning	Acetone	
F4NE7E	Visual	Stereoscope	
F7RJRT	Visual	Eyes	
F8PMPA	Visual	Microscope	
FDR4R4	Visual	no tool used	
FDYFQF	Visual	Stereoscope	
FE7T9G	Cleaning	Acetone	
FL8KLX	None		
FT6CT8	None		
FVT9CD	None		
FYTXZT	None		
FZ6QFT	Visual	Stereoscope	
G879QY	None		
G8KRBW	Cleaning	Methanol	
GBZ6D6	Polishing	Dremel	
GE37D2	Visual	Camera	
GEFW4X	None		
GJUA87	None		
GJUXGC	Visual	magnifying glass	
	Polishing	Steel wool	
GLL9L4	Visual	Stereoscope	
GMFA98	None		
GQEL68	Cleaning	Ethanol	
GTYEYM	Cleaning		
GWHEE3	None		
GXDXG4	Polishing	Steel wool	

TABLE 3

Sample Preparation			
WebCode	**Method**	**Tool Used**	**Grit Size**
GZH94E	Polishing	Dremel	240
H8YC47	Cleaning	Acetone	
	Visual	Stereoscope	
	Polishing	Rotary Tool	Rubber Wheel
	Polishing	Emery paper	400 & 800 Grit
	Cleaning	Acetone	
HCRHD3	Polishing	Dremel	
HG6QUU	Visual		
	Polishing	Dremel	
HJTWY4	Visual		
	Sanding	Sand paper	Unknown
	Polishing	Rotary Tool	
HQC3XV	Sanding	Sand paper	600, 1000 & 1500
HQDVUH	Cleaning	Acetone	
HV464G	None	Stereoscope	
HZZTH3	Cleaning	SKC-S cleaner	
J32GCJ	Sanding	Sand paper	400
J3XWKA	Visual	Stereoscope	
JAKMAP	Visual	Stereoscope	
JJL6KT	None		
JTG3F9	None		
JTTP6A	None		
JTWAXJ	Polishing	Sand paper	1000
JU92U7	None		
JVJ4F6	Visual	Microscope	
	Cleaning	Acetone	
	Visual	Microscope	
	Polishing	polishing compound	
	Sanding	Sand paper	600
	Polishing	polishing compound	
	Cleaning	Acetone	
JX4XBK	Visual		
	Sanding	Sand paper	200 and 400
KACZ83	Sanding	Sand paper	230
KAY9G7	Sanding	Sand paper	320
	Polishing	Dremel	
KAZ7R3	Visual	Stereoscope	
KDYJC7	None		
KE8U64	Sanding	Sand paper	600 grit
KF6PK8	Sanding	Stereoscope	120

TABLE 3

Sample Preparation			
WebCode	**Method**	**Tool Used**	**Grit Size**
KF6ZRR	Polishing	Dremel	
KGDGH9	Visual	Stereoscope	
	Polishing	Dremel	120
KMK968	Sanding	Sand paper	120 grit paper
	Cleaning	Steel wool	
KRWQ72	Polishing	Rotary Tool	
KTRA93	None		
KU747B	Visual	Stereoscope	
	Sanding	Dremel	320
KVETD8	Visual	Stereoscope	
	Visual	Microscope	
	Cleaning	Magnaflux solvent	
KY2X4C	None		
KZRQME	Polishing	Steel wool	
	Sanding	Sand paper	1000 - barely used
KZTGX4	Sanding	Emery paper	400 and 2000
L6EZ9X	Visual	Stereoscope	
L93CAN	None		
LDVEB3	None		
LGRZ36	Polishing	Dremel	
LGVKUE	Cleaning	Acetone	
LHMJ9D	Visual		
LKYEU6	Visual		
LMG7T8	Polishing	Dremel	Extra fine
LQHEC3	None		
LW84NZ	Visual		
	Cleaning	Acetone	
LYBMG9	Sanding	Sand paper	240D
M43KEW	Polishing	Dremel	
M4KZY8	None		
M6UJRU	Visual	Stereoscope	
M76JPP	Polishing	Dremel	
MDMHAB	Visual		
	Cleaning	Acetone	
MKQVZY	Polishing	Rotary Tool	
MNLRN4	None		

TABLE 3

Sample Preparation			
WebCode	**Method**	**Tool Used**	**Grit Size**
MY9NQQ	Visual	Stereoscope	
	Sanding	Emery paper	2500
	Sanding	Emery paper	3000
	Cleaning	water	
NDN3Q4	Sanding	Dremel	fine sanding wheel
NEYQ8U	Polishing	Dremel	
	Visual	Stereoscope	
NLJC99	Sanding	Rotative tool	500
NMRYTL	Cleaning	Kimwipe tissue	
NP3W73	Visual		
NQRBNL	Visual		
	Polishing	Dremel	
NWW9WP	None		
P33PY7	Visual	Stereoscope	
	Sanding	Sand paper	400 AND 600 GRIT
P4DZ63	Visual		
P4FW8L	None		
PGYE2B	None		
PUBPRL	Polishing	Dremel	
PVH62D	Sanding	Sand paper	400
PWBV7R	Polishing	Emery paper	
PYKVCY	None		
Q3EJYJ	None	Stereoscope	
Q8BDBL	Visual	Stereoscope	
	Sanding	Sand paper	120
	Sanding	Emery paper	400
	Sanding	Emery paper	600
	Sanding	Emery paper	100
	Polishing	Rotary Tool	
QAJZVY	Polishing	Rotary Tool	
QGFKR8	None		
QHALZW	None		
QKE9D2	None		
QKG2AN	Sanding	Sand paper	160
	Cleaning	Acetone	
QKJJFZ	None		
QPCM8K	Polishing	Dremel	
R2YJFU	Polishing	Rotary Tool	

TABLE 3

Sample Preparation			
WebCode	**Method**	**Tool Used**	**Grit Size**
R4MVGK	Visual	Photography	
	Visual	Stereoscope	
R4PDMW	Visual	torch	
	Sanding	Sand paper	400/800/1500
	Cleaning	Acetone	
R84BTX	Visual		
	Grinding	Dremel	
	Sanding	Sand paper	400
RJJAET	Sanding	Sand paper	150 grit for 1 minute
RJKZPK	Sanding	Sand paper	600
RQDBV8	Visual	Stereoscope	
	Polishing	Dremel	
RTNXRZ	Cleaning	SKC-S Magnaflux Cleaning Solution	
RTRHJA	Visual	Naked eyes	
	Cleaning	Acetone	
RW6ETJ	Visual	Stereoscope	
	Polishing	Dremel	
	Polishing	Flitz	
	Visual	Stereoscope	
T4GXJU	None		
T783F8	Polishing	Sand paper	130
T9FEVN	Visual	Stereoscope	
TD9GYN	Visual	Stereoscope	
TE6UMG	None		
TH2FDJ	Polishing		
TMU6P4	Cleaning	Acetone	
TQTW3M	Polishing	Steel wool	
	Cleaning	Ethanol	
TTKVGL	Polishing	Rotary Tool	
TVNQZN	None		
TXFAW4	Visual	Microscope	
TXZHYX	Polishing	Dremel	
U4GLTZ	Visual	Stereoscope	
	Polishing	Sand paper	fine grit
U8D2P8	None		
U8GWPZ	Polishing	Rotary Tool	
U98RVL	Visual		
UBE6JG	Visual	Stereoscope	
UBVUU2	Polishing	Rotary Tool	600

TABLE 3

Sample Preparation			
WebCode	**Method**	**Tool Used**	**Grit Size**
UD2RAG	Sanding	Rotary Tool	grinding disc 240
UDM6YU	Visual	Stereoscope	
	Polishing	Steel wool	
UEWACH	Visual	Stereoscope	
UGN4B9	Sanding	Sand paper	400
	Cleaning	Acetone	
ULFF9P	None		
UN7RRV	Sanding	Dremel	200
	Polishing	Dremel	
V29KWE	Sanding	Sand paper	180
	Sanding	Sand paper	400
V63LUL	Cleaning	Acetone	
VN2GPX	Visual	Stereoscope	
VN62G8	Polishing	Sand paper	400 Y 1000
VRG9FQ	Visual		
VRHCKG	Sanding	Sand paper	60, 280, 600, 1000
VUNWB3	Sanding	Sand paper	150-, 180, and 220-grit
	Polishing		
VWWKVF	Visual	Stereoscope	
VXM973	Visual	Magnifying glass	
W3WEBT	Polishing	Dremel	Extra fine Cratex wheel
W49VN7	Polishing	Sand paper	400
W66BWW	Visual	Stereoscope	
W684RJ	Visual	Stereoscope	
	Cleaning	IPA	
WCLYGQ	Visual	Torch eye	
	Sanding	Emery paper	400, 800, 1200
	Cleaning	Ethanol	
WGVRHW	None		
WJ4EZN	Visual	Stereoscope	
	Cleaning	Water	
WKHW4U	Polishing	Dremel	
WM3VDH	None		
WP7NA2	Polishing	Dremel	600 (WHETSTONE)
WXNXVD	None		
WXNZKG	None		
X924ZY	None		
X9KQWV	Cleaning	Acetone	
XB4CD3	Polishing	Dremel	

TABLE 3

Sample Preparation			
WebCode	**Method**	**Tool Used**	**Grit Size**
XQHKCK	None		
XTN9RB	Visual	Stereoscope	
XYA22P	None		
Y83TMN	Visual	Stereoscope	
	Cleaning	Acetone	
	Cleaning	SKC-S	
YBKVUU	None		
YBP7WR	Visual	Stereoscope	
	Polishing	Dremel	
YDNNPD	None		
YRBVPY	Visual	Stereoscope	
	Polishing	Dremel	
YRQAWB	Visual	Stereoscope	
YT6MVE	Visual		
	Visual	Photography	
	Visual	LSV2	
YVA8KY	None		
YXWRQ4	Visual	Microscope	
	Polishing	Dremel	unknown
YYQ3EY	Polishing	Emery paper	
YZ3CCH	None		
Z3ZA22	Polishing	Sand paper	1000,360
Z4UZ8F	None		
Z8YJEN	None		
Z9RGKA	Sanding	Sand paper	1200
ZAPZZD	Visual	Microscope	
	Sanding	Dremel	
	Cleaning	Acetone	
ZCB2KQ	Sanding	Sand paper	wet and dry paper, 240 and 400
ZG3J7B	Visual	Stereoscope	
ZG76JH	None		
ZHHXGQ	None		
ZLEQ8F	Visual	Stereoscope	
ZPFUY2	Sanding	Sand paper	220
	Cleaning	Acetone	
ZQAK4G	None		
ZTZJHE	Cleaning	Acetone	
ZV4GRL	Polishing	Dremel	

TABLE 3

Sample Preparation			
WebCode	**Method**	**Tool Used**	**Grit Size**
ZXP2WQ	Visual	Stereoscope	
ZXUCYN	Sanding	Emery paper	400
	Sanding	Emery paper	800
	Polishing	Cloth	Autosol metal polish
ZY4NBY	None		
ZY6DKM	Polishing	Ethanol	

Response Summary **Participants: 325**

Sample Preparation

Visual Method:	**113**
Sanding Method:	**55**
Polishing Method:	**95**
None:	**85**

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**
24D76K	Fry's Reagent	30 seconds
	Turner's Reagent	10 seconds
26N3EV	Magnetic Particle Inspection (MPI)	
	Davis	~30 seconds
	Fry's Reagent	~1 minute
	Turner's Reagent	~10 seconds
	Fry's Reagent	~1 minute
	Turner's Reagent	~10 seconds
2EB2AA	Magnetic Particle Inspection (MPI)	
2U9YPK	Fry's Reagent	3 minutes
2WVT99	MagnaFlux	Black and red utilized
	Fry's Reagent	60 seconds
2Y3FWR	The sample was eating away chemical solution CuCl*2H2O + HCl + H2O	Time 30 min.
33GD3U	Regula 7517 magneto optical	
33YYGH	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	~30 seconds
363WPP	Acid Etch Method	Davis reagent approximately 1 minute
	Turner's Reagent	Approximately 5 to 6 minutes total
367GHY	MagnaFlux	
	Fry's Reagent	2 minutes
37WFVX	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	1 minute in 3 intervals
3928LP	Fry's Reagent	Swabbing 30 minutes
396RDY	MagnaFlux	
	Fry's Reagent	1 min
3AVW77	MagnaFlux	used U-shaped magnet
	Acidic Ferric Chloride	swiped with cotton swabs
	20% Nitric Acid	swiped with cotton swabs
3AYHJD	Fry's Reagent	2 x 30 sec
3ETHVN	Magnetic Particle Inspection (MPI)	
3LPA4H	MagnaFlux	Bar processed with MagnaFlux as received
	Acid Etch Method	Less than a minute
	Acid Etch Method	Less than a minute
3QGGMQ	Fry's Reagent	Swiped for roughly 5 minutes

TABLE 4

Recovery Methods		
WebCode	**Method**	**Time**
3QK2EZ	MagnaFlux	
3VD2TV	Magnetic Particle Inspection (MPI)	
	Davis	30 seconds
	Fry's Reagent	30 seconds
	Davis	30 seconds
	Magnetic Particle Inspection (MPI)	
	Davis	30 seconds
	Turner's Reagent	15 seconds
3VEUTN	Acid Etch Method	10 min
47TDJX	Fry's Reagent	2 applications of 2 minutes each
4AUEPM	Acid Etch Method	Davis ~5 minutes
	Fry's Reagent	~2 minutes
4CHR96	MagnaFlux	
	Acid Etch Method	less than a minute for each swab
	Fry's Reagent	greater than a minute for each swab
4DRY9C	MagnaFlux	
	Fry's Reagent	varied
	Acid Etch Method	20 % Nitric Acid, varied
4ML3LL	MagnaFlux	
4TMEGJ	As below - Least destructive to more destructive	Approximately five to ten minutes. [Participant reported a detailed narrative that was not transferable to the final report. Please see Table 5: Additional Comments.]
4UYWUW	Acid Etch Method	5 minutes
4VTMZC	25% Nitric Acid	~1 minute
4W3RDZ	Fry's Reagent	The time was practically instantaneous
646ZH8	Acid Etch Method	10 min.
6CY93X	MagnaFlux	
6HJU2R	Fry's Reagent	5 Minutes
6HKEGK	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	5-10 seconds
	Turner's Reagent	5-10 seconds
	Davis' Reagent	5-10 seconds
	25% nitric acid reagent	5-10 seconds
6JFWJL	10% Nitric Acid	15 minutes
6UDAQR	MagnaFlux	
	Electro-acid	Instantaneous

TABLE 4

Recovery Methods		
WebCode	**Method**	**Time**
6UEH2D	MagnaFlux	
	Fry's Reagent	Acid was swiped across the obliterated area repeatedly, seconds at a time
	20% Nitric Acid	Acid was swiped across the obliterated area repeatedly, seconds at a time
6XETXD	MagnaFlux	
	Fry's Reagent	alternating 10-15 second of Fry's and 20% Nitric Acid
	20% Nitric Acid	alternating 10-15 second of Fry's and 20% Nitric Acid
6YQP3H	Turner's Reagent	Not timed
	Fry's Reagent	not timed
74EPW4	Magnetic Particle Inspection (MPI)	
	Davis Reagent	30 seconds
	Magnetic Particle Inspection (MPI)	
	Turner's Reagent	30 seconds
	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	30 seconds
	Magnetic Particle Inspection (MPI)	
78Z2QM	MagnaFlux	
	Electro-acid	20 seconds
7A62TL	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	Used 5 cotton swabs, swabbing for approximately 15-30 seconds per swab
7BZKYT	MagnaFlux	
7FUJAH	Fry's Reagent	Approximately 50-60 seconds
	Turner's Reagent	Approximately 30 seconds
7HF4EL	Magnetic Particle Inspection (MPI)	
	Davis's Reagent	~5 minutes
7HVM26	Magnetic Particle Inspection (MPI)	
	Davis	1 minute
	Turner's Reagent	1 minute
	Fry's Reagent	30 seconds
	Turner's Reagent	1 minute
7JTQYL	MagnaFlux	
	Fry's Reagent	30 seconds
7KLQUC	MagnaFlux	5 minutes

TABLE 4

Recovery Methods		
WebCode	**Method**	**Time**
7LWQTR	MagnaFlux	
	Davis Reagent	1 Swab; 5 min (1X)
	Fry's Reagent	5 Swabs; 1 min (1X)
	10% NaOH	4 Swabs
7UBCZA	MagnaFlux	
	Davis' Reagent	10 minutes
	Turner's Reagent	15 Minutes
7XAFKN	MagnaFlux	
	Fry's Reagent	seconds - wiped on with swab and wiped off with Kimwipe
	Davis Reagent	seconds - wiped on with swab and wiped off with Kimwipe
7ZF83H	Fry's Reagent	6:37 minutes
83HCAB	MagnaFlux	
	Acidic Ferric Chloride	5 minutes
	Fry's Reagent	5 minutes
	Acid Etch Method	20% Nitric, 5 minutes
84BU46	nitric asid	around 15 to 30 minutes
88TPQA	MagnaFlux	
	Acidic Ferric Chloride	30-90 seconds, swabbed
	Nitric Acid	30-90 seconds, swabbed
	Fry's Reagent	30-90 seconds, swabbed
	Stabilized with oil	
8F8BZD	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	~ 1 min.
	Acid Etch Method	~ 1 min.
	Acid Etch Method	~ 1 min.
	Acid Etch Method	~ 1 min.
	Magnetic Particle Inspection (MPI)	
	Acid Etch Method	~ 1 min.
	Acid Etch Method	~ 1 min.
8HRHY2	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.
8K36XE	25% Nitric Acid	Seconds

TABLE 4

Recovery Methods		
WebCode	**Method**	**Time**
8LC623	MagnaFlux	
	Davi's Reagent	1 to 2 minutes
	MagnaFlux	
	Turner's Reagent	1 to 2 minutes
	MagnaFlux	
	Fry's Reagent	3 to 5 minutes
	MagnaFlux	
8PDDZ6	MagnaFlux	
	Turner's Reagent	Few minutes
	Fry's Reagent	Few minutes
8PGV8F	Nirtic acid 25%	Brief wipes
8PXW7C	25% Nitric Acid	~30 seconds
	25% Nitric Acid	~30 seconds
	25% Nitric Acid	~30 seconds
	25% Nitric Acid	~30 seconds
	Fry's Reagent	~1 minute
8QKTAW	Acid Etch Method	HNO3, FRY, 10 minutes each one
93EBLG	Fry's Reagent	several times for a minute or less while rubbing with cotton swab
96397M	MagnaFlux	
9989DT	Acid Etch Method	10-15 minutes
9A2YJ8	MagnaFlux	
	Fry's Reagent	Swabbed approximately 10 minutes
9D2AE8	MagnaFlux	
	Davis Reagent	
	Turner's Reagent	
	Fry's Reagent	
9DD8KC	Magnetic Particle Inspection (MPI)	
	Acid Etch Method	1 minute
	Fry's Reagent	~45 minutes with periodic reapplication, rolling, and swiping.
	Turner's Reagent	3 minutes
9DXBAK	Turner's Reagent	
	Modified Fry's Reagent	
	Fry's Reagent	
9LW894	Fry's Reagent	30 to 60 seconds
	Turner's Reagent	30 to 60 seconds

TABLE 4

Recovery Methods		
WebCode	**Method**	**Time**
9NWJXA	MagnaFlux	1 min
	Fry's Reagent	1 min
	Acidic Ferric Chloride	1 min
	Nitric Acid (20%)	1 min
9QNEM4	Fry's Reagent	30 seconds
9RYG93	MagnaFlux	
9U2FN4	Magnetic Particle Inspection (MPI)	
9U4AZF	Turner's Reagent	5 min
	Fry's Reagent	5 min
	Water	To Rinse Off Acids
9UK2E7	Electro-magnetic	
9XQKKE	Fry's Reagent	5min
9YHM69	MagnaFlux	1-3 minutes
	Fry's Reagent	1-3 minutes
	20% Nitric Acid	1-3 minutes
A7D6XQ	Acid Etch Method	10 MINUTES
AE4MCY	MagnaFlux	
AGUQ67	Davis Reagent	2 min
	Fry's Reagent	5 min
	Turner's Reagent	1 min
AH4ZUH	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	1:1 diluted, 15 seconds for each step, several steps done over course of 30 min.
	25% nitric	10 seconds to help visualize
AH6TQ6	MagnaFlux	
	Fry's Reagent	5 Minutes
AH9BWF	MagnaFlux	
ANB68B	MagnaFlux	
	Davis	
	Turner's Reagent	
	Fry's Reagent	
	50% Nitric Acid	
APNWX8	MagnaFlux	
	Fry's Reagent	30 minutes
	20% Nitric Acid	5 minutes
ARQYM9	Fry's Reagent	10-20sec
AT9E9K	Fry's Reagent	5 minute
	Nitric Acid	5 minute

TABLE 4

Recovery Methods		
WebCode	**Method**	**Time**
AYT2WF	MagnaFlux	
	Fry's Reagent	~45-60 seconds
B369QT	MagnaFlux	60 seconds
	Davis Reagent	20 Seconds
B3AQPR	MagnaFlux	1 min
	Fry's Reagent	2 min
B3DLNK	Magnetic Particle Inspection (MPI)	
	Davis	10 swabs-seconds each swab
	Turner's Reagent	10 swabs-seconds each swab
	Fry's Reagent	50 swabs-let some sit for a few seconds, others for 30 seconds to a minute
B44GV7	MagnaFlux	
BAPCWA	MagnaFlux	
	Fry's Reagent	5 minutes
BGB3KQ	Acid Etch Method	Approximately 5-8 minutes
BJEPQM	MagnaFlux	
	Turner's Reagent	seconds
	Fry's Reagent	seconds
BJTL3Y	Magnetic Particle Inspection (MPI)	
	Acid Etch Method	Davis and Turner' s were used briefly, and Fry's was a continuous application of acid until characters were observed.
BUHFUJ	Davis Reagent	Approx 20 seconds, per application
	Turner's Reagent	Approx 20 seconds, per application
	Fry's Reagent	Approx 20 second, per application
BVTHGH	Davis'	
	Turner's Reagent	
	Fry's Reagent	
	MagnaFlux	
C4F3YK	Fry's Reagent	Applied and removed several times, for approximately 8 minutes.
	MagnaFlux	Applied for approximately 5 minutes.
	Fry's Reagent	Applied and removed several times, for approximately 8 minutes.
	MagnaFlux	Applied for approximately 5 minutes.
C7JT4E	Acid Etch Method	30 minutes
CCRRKR	Acid Etch Method	HNO3 30% V/V, 5 minutes
CFARZ8	MagnaFlux	
	Fry's Reagent	5 min
	25 % Nitric Acid	1 min

TABLE 4

Recovery Methods		
WebCode	**Method**	**Time**
CGNBQX	MagnaFlux	
	Davis Reagent	30 seconds at a time for approx. 2 min total
	Turner's Reagent	30 seconds at a time for approx. 2 min total
	Fry's Reagent	30 seconds at a time for approx. 10 min total
CK7FJZ	Acid Etch Method	14 mins total
CMCU9E	MagnaFlux	
CMURKQ	MagnaFlux	
	Fry's Reagent	10 min
CT44HC	Fry's Reagent	Approx 10 mins
CTYQQA	Davis Reagent	approximately 10-15 seconds
	Turner's Reagent	approximately 10-15 seconds
	Fry's Reagent	approximately 10-15 seconds, twice
CUTCLL	MagnaFlux	
	Acidic Ferric Chloride	
	Fry's Reagent	
CYK92J	Magnetic Particle Inspection (MPI)	
	Acid Etch Method	Davis Reagent; total of 15 minutes wiping the surface with a cotton swab
CYM2UZ	Fry's Reagent	1 or 2 minutes at a time.
D27PZB	Acid Etch Method	Davis - 3 minutes
	Steel Wool	
	Turner's Reagent	5 minutes
	Steel Wool	
	Fry's Reagent	5 minutes
	Fry's Reagent	5 minutes
	Turner's Reagent	3 minutes
D3GPYQ	MagnaFlux	
D98XPC	Magnetic Particle Inspection (MPI)	
DA3MMD	Fry's Reagent	<1 minute
DBCRZ3	Fry's Reagent	less than 30 seconds
DFQ64B	MagnaFlux	
	Davis Reagent	5 minutes
	Turner's Reagent	5 minutes
	Fry's Reagent	10 minutes
	Turner's Reagent	2 minutes
	Fry's Reagent	10 minutes
	Turner's Reagent	2 minutes

TABLE 4

Recovery Methods		
WebCode	**Method**	**Time**
DJ9PPQ	MagnaFlux	
	Acid Etch Method	1 minute
	MagnaFlux	
DJQGYB	Magnetic Particle Inspection (MPI)	
	Davis	Several minutes
	Turner's Reagent	Several minutes
	Fry's Reagent	Less than one minute
DNGQ99	MagnaFlux	
	Fry's Reagent	5 minutes
DTGWRK	MagnaFlux	
	Davis Reagent	
	Fry's Reagent	
E7XC74	Fry's Reagent	~30 seconds
	25% Nitric Acid	~10 seconds
	Fry's Reagent	~10 seconds
	25% Nitric Acid	~30 seconds
EAXM34	Fry's Reagent	3-5 seconds
EF2N6J	MagnaFlux	
EFZW9W	MagnaFlux	
	Turner's Reagent	5 minutes
	Fry's Reagent	10 minutes
EMKWNA	Acid Etch Method	~5 minutes
	Turner's Reagent	~3 minutes
	Fry's Reagent	~2 minutes
	Turner's Reagent	~30 seconds
ENZGQE	Magnetic Particle Inspection (MPI)	
EQ2ZVE	Magnetic Particle Inspection (MPI)	
	Acid Etch Method	5 minutes
ET9E67	MagnaFlux	
	Fry's Reagent	5 min
EU6VG3	MagnaFlux	
	Fry's Reagent	swiped with swab
	Nitric Acid 20%	swiped with swab
F22AHU	MagnaFlux	20 Minutes
	Davis/Turner/Frys; Nitric/Phosphoric Acids	3 hours
F4NE7E	Davis Reagent	10 second intervals
	Turner's Reagent	10 second intervals
	Fry's Reagent	10 second intervals

TABLE 4

Recovery Methods		
WebCode	**Method**	**Time**
F7RJRT	MagnaFlux	required as 1st option - limited results as expected
	Fry's Reagent	30 seconds +/-
	25% HNO3	20 seconds +/-
F8PMPA	MagnaFlux	
	Turner's Reagent	5 minutes
	Fry's Reagent	5 minutes
FDR4R4	MagnaFlux	
	25% Nitric Acid	
	Fry's Reagent	
FDYFQF	Magnetic Particle Inspection (MPI)	
	MagnaFlux	
	Fry's Reagent	several seconds
FE7T9G	Acid Etch Method	approximately 10 minutes
FL8KLX	MagnaFlux	
	Fry's Reagent	
	25% Nitric Acid	
FT6CT8	Fry's Reagent	less than 1 minute per application
FVT9CD	Magnetic Particle Inspection (MPI)	
FYTXZT	MagnaFlux	
	Acidic Ferric Chloride	5-10 seconds each time applied
	20% Nitric Acid	5-10 seconds each time applied
FZ6QFT	MagnaFlux	2-3 minutes
	Fry's Reagent	2-3 minutes
	Acidic Ferric Chloride	2-3 minutes
G879QY	MagnaFlux	
	Acid Etch Method	Davis' Reagent - 10 minutes
	Turner's Reagent	30 minutes
G8KRBW	Davis Reagent	~ 2 minutes per application (applied 3 times)
GBZ6D6	Fry's Reagent	30 seconds to one minute
	25% Nitric Acid	30 seconds to one minute
GE37D2	Magnetic Particle Inspection (MPI)	
	Davis	1 minute
	Turner's Reagent	1 minute
	Fry's Reagent	1 minute

TABLE 4

Recovery Methods		
WebCode	**Method**	**Time**
GEFW4X	Acid Etch Method	Aqua Regia ~20 seconds
	Turner's Reagent	~2 minutes
	Fry's Reagent	~45 seconds
	Acid Etch Method	Aqua Regia ~1 minute
	Acidic Ferric Chloride	~1 minute
	Fry's Reagent	~45 seconds
	Turner's Reagent	~2 minutes
	Acid Etch Method	Aqua Regia ~1 minute
	Acid Etch Method	20% Hydrochloric Acid ~ 30 seconds
GJUA87	MagnaFlux	
	Fry's Reagent	30 seconds
GJUXGC	Davis Reagent	swiped over the area for 15-20 seconds
	MagnaFlux	~30 seconds to visualize characters
	Turner's Reagent	swiped over the area for 15-20 seconds
	MagnaFlux	~30 seconds to visualize characters
	Fry's Reagent	swiped over the area for 15-20 seconds
	MagnaFlux	~30 seconds to visualize characters
GLL9L4	Magnetic Particle Inspection (MPI)	
	Davis	2-3 min
	Turner's Reagent	2-3 min
	Fry's Reagent	1 min
GMFA98	Magnetic Particle Inspection (MPI)	
	Acid Etch Method	2 minutes
GQEL68	Electro-magnetic	
GTYEYM	MagnaFlux	
	Fry's Reagent	1 min
GWHEE3	MagnaFlux	
	Fry's Reagent	1 minute
GXDXG4	Davis Reagent	brushed with cotton swab
	Turner's Reagent	brushed with cotton swab
	25% Nitric Acid	5 minutes
GZH94E	Magnetic Particle Inspection (MPI)	
	Davis	2 minutes
	Turner's Reagent	20 minutes
	Fry's Reagent	1 hour
H8YC47	Fry's Reagent	less than a minute.
HCRHD3	MagnaFlux	
	Fry's Reagent	Used 10 to 15 swabs, a few minutes

TABLE 4

Recovery Methods		
WebCode	**Method**	**Time**
HG6QUU	DAVIS Reagent	30 SECONDS PER APPLICATION
	Turner's Reagent	30 SECONDS PER APPLICATION
	Fry's Reagent	30 SECONDS PER APPLICATION
HJTWY4	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	2 minutes
HQC3XV	Fry's Reagent	5 to 10 seconds
HQDVUH	Fry's Reagent	
HV464G	Acid Etch Method	swabbed repeatedly (seconds at a time)
HZZTH3	MagnaFlux	
	Davis Reagent	~5 mins
	Turner's Reagent	~5 mins
J32GCJ	MagnaFlux	
	Fry's Reagent	five minutes approximately
J3XWKA	Fry's Reagent	2 minutes, in increments
JAKMAP	MagnaFlux	
	Fry's Reagent	2-3 minutes
	Acid Etch Method	2-3 minutes
JJL6KT	MagnaFlux	One minute
	Davis	One minute
	Turner's Reagent	One minute
	Fry's Reagent	One minute
JTG3F9	MagnaFlux	
	Fry's Reagent	5 minutes
JTTP6A	Fry's Reagent	active swabbing for less than 2 minutes
JTWAXJ	MagnaFlux	
	Fry's Reagent	Two minutes
JU92U7	Magnetic Particle Inspection (MPI)	
JVJ4F6	MagnaFlux	
	Fry's Reagent	30 minutes
JX4XBK	MagnaFlux	
	Acid Etch Method	1 min
	Fry's Reagent	1-2min
KACZ83	Davis	5 minutes
	Turner's Reagent	10 Minutes
	Fry's Reagent	2 Minutes
KAY9G7	MagnaFlux	
	Davis' reagent	~2 minutes each time
	Turner's Reagent	~2 minutes each time

TABLE 4

Recovery Methods		
WebCode	**Method**	**Time**
KAZ7R3	MagnaFlux	
	Davis Reagent	1-2 seconds
	Turner's Reagent	1-2 seconds
	Fry's Reagent	1-2 seconds
KDYJC7	MagnaFlux	
	Fry's Reagent	2 Minutes
KE8U64	MagnaFlux	
	Fry's Reagent	30 seconds to one minute
	Turner's Reagent	less than 30 seconds
	Fry's Reagent	30 seconds to one minute
	Turner's Reagent	30 seconds to one minute
KF6PK8	Davis Reagent	5 minutes
	Turner's Reagent	5 minutes
	Fry's Reagent	5 minutes
KF6ZRR	Magnetic Particle Inspection (MPI)	
KGDGH9	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	
KMK968	Acid Etch Method	Davis' Reagent 4 minutes
	Turner's Reagent	4 minutes
	Fry's Reagent	4 minutes
KRWQ72	Fry's Reagent	2 minutes
KTRA93	Fry's Reagent	5 minutes
KU747B	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	Less than 30 seconds
KVETD8	MagnaFlux	
	Fry's Reagent	less than 5 minutes
	25% Nitric Acid Solution	less than 5 minutes
KY2X4C	Acid Etch Method	4-5 second per application. 6 total applications
KZRQME	Fry's Reagent	30 secs
	Fry's Reagent	30 secs
	25% Nitric Acid	30 secs
	Fry's Reagent	15 secs
KZTGX4	Fry's Reagent	5 minutes
L6EZ9X	MagnaFlux	
	Fry's Reagent	swipe with cotton for a minute
	Acid Etch Method	swipe with cotton for a minute
L93CAN	MagnaFlux	5 min
	Fry's Reagent	5 min

TABLE 4

Recovery Methods		
WebCode	**Method**	**Time**
LDVEB3	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	10 second increments for 5 minutes
LGRZ36	Magnetic Particle Inspection (MPI)	
LGVKUE	Fry's Reagent	swipe for 15-20 minutes
LHMJ9D	Fry's Reagent	less than 1 minute
	Nitric Acid	less than 1 minute
LKYEU6	Acid Etch Method	About 5 mins
LMG7T8	Fry's Reagent	5 minutes
	Fry's Reagent	5 minutes
	Fry's Reagent	5 minutes
LQHEC3	Mild heat.	
	Fry's Reagent	15 mins
LW84NZ	Magnetic Particle Inspection (MPI)	
LYBMG9	MagnaFlux	
M43KEW	Fry's Reagent	
	MagnaFlux	
	25% Nitric Acid	
M4KZY8	MagnaFlux	
	Davis reagent	15 minutes
	Turner's Reagent	15 minutes
	Fry's Reagent	15 minutes
	Turner's Reagent	10 minutes
	Fry's Reagent	10 minutes
	Turner and Fry reagent mixture	10 minutes
M6UJRU	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	~1 Minute (~10 cotton swabs used)
	20% Nitric Acid	~1 Minute (~10 cotton swabs used)
M76JPP	MagnaFlux	
MDMHAB	Magnetic Particle Inspection (MPI)	
	Turner's Reagent	5 minutes
	Fry's Reagent	1 minute
MKQVZY	Magnetic Particle Inspection (MPI)	
	Acid Etch Method	2 Minutes
MNLRN4	Magnetic Particle Inspection (MPI)	
	Davis Reagent	2 minutes
	Fry's Reagent	1 minute

TABLE 4

Recovery Methods		
WebCode	**Method**	**Time**
MY9NQQ	Electro-magnetic	
	spot test on backside	4
	Acid Etch Method	4
	Acid Etch Method	4
	Acid Etch Method	4
	Acid Etch Method	4
	Acid Etch Method	5
	Acid Etch Method	5
	Acid Etch Method	5
	Acid Etch Method	5
NDN3Q4	MagnaFlux	
	Fry's Reagent	~30 second increments
NEYQ8U	MagnaFlux	
	Nitric Acid	Nitric Acid - minutes
	Acidic Ferric Chloride	minutes
	Fry's Reagent	minutes
	Stabilizing oil	
NLJC99	Acid Etch Method	2 x 1 min
NMRYTL	MagnaFlux	
	Fry's Reagent	30 seconds or less
NP3W73	Magnetic Particle Inspection (MPI)	
NQRBNL	MagnaFlux	
NWW9WP	MagnaFlux	
P33PY7	MagnaFlux	
	Fry's Reagent	ABOUT 30 SECONDS PER APPLICATION
P4DZ63	Fry's Reagent	2 min
P4FW8L	MagnaFlux	2 minutes
	Davis's Reagent	2 minutes
	Turner's Reagent	2 minutes
	Fry's Reagent	1 minute
	Davis's Reagent	1 minute
	Fry's Reagent	1 minute
	Davis's Reagent	1 minute
PGYE2B	Fry's Reagent	2-3 minutes
PUBPRL	Fry's Reagent	10 minutes
PVH62D	MagnaFlux	
PWBV7R	Fry's Reagent	multiple quick applications
PYKVCY	Fry's Reagent	10 minutes

TABLE 4

Recovery Methods		
WebCode	**Method**	**Time**
Q3EJYJ	MagnaFlux	
	Fry's Reagent	10 minutes
Q8BDBL	MagnaFlux	
	Fry's Reagent	
QAJZVY	Acid Etch Method	Davi's Reagent used for approximately 10 minutes
	Turner's Reagent	15 minutes
	Fry's Reagent	8 minutes
QGFKR8	Turner's Reagent	15 minutes
	Fry's Reagent	3 minutes
QHALZW	MagnaFlux	
	Modified Fry's Reagent	~10 min
QKE9D2	Acid Etch Method	swiped only....seconds
QKG2AN	Fry's Reagent	5 minutes
QKJJFZ	Magnetic Particle Inspection (MPI)	
QPCM8K	Turner's Reagent	30 second intervals
	Fry's Reagent	30 second intervals
	MagnaFlux	Several minute intervals
R2YJFU	MagnaFlux	
	Fry's Reagent	15 minutes
	Nitric acid	10 minutes
R4MVGK	MagnaFlux	
	Acid Etch Method	5 minutes
R4PDMW	Fry's Reagent	5 minutes
R84BTX	Magnetic Particle Inspection (MPI)	
	Turner's Reagent	0.25
	Davis' Reagent	0.25
	Fry's Reagent	0.5
RJJAET	Fry's Reagent	1 minute
RJKZPK	Fry's Reagent	15 minutes total
	Acidic Ferric Chloride	5 minutes total
RQDBV8	Davis Reagent	20 seconds
	Bill Fort's Reagent	40 seconds
	Fry's Reagent	20 seconds
RTNXRZ	MagnaFlux	
	Fry's Reagent	Minutes
RTRHJA	Acid Etch Method	10 minute

TABLE 4

Recovery Methods		
WebCode	**Method**	**Time**
RW6ETJ	Magnetic Particle Inspection (MPI)	
	Davis Reagent	
	Magnetic Particle Inspection (MPI)	
	Turner's Reagent	
	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	
	Magnetic Particle Inspection (MPI)	
	HCL	
T4GXJU	Fry's Reagent	5-10 minutes
	Turner's Reagent	10-15 minutes
	Davis Reagent	10-15 minutes
T783F8	MagnaFlux	
T9FEVN	MagnaFlux	
	Fry's Reagent	5-10 minutes
TD9GYN	MagnaFlux	seconds
TE6UMG	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	~3 minutes
TH2FDJ	MagnaFlux	
TMU6P4	Acid Etch Method	6 minutes
	MagnaFlux	1 minute
TQTW3M	Fry's Reagent	about fifteen minutes
TTKVGL	Fry's Reagent	1 minute
	Fry's Reagent	1 minute
	Fry's Reagent	1 minute
TVNQZN	MagnaFlux	1 hour
	Fry's Reagent	less than 15 minutes
	20% Nitric Acid	less than 5 minutes
TXFAW4	Turner's Reagent	150 sec
TXZHYX	Magnetic Particle Inspection (MPI)	
	Davis	between 30 seconds and 5 mins
	Turner's Reagent	between 30 seconds and 5 mins
	Fry's Reagent	between 30 seconds and 5 mins
U4GLTZ	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	1 min
U8D2P8	MagnaFlux	No applies
	Fry's Reagent	5 minutes

TABLE 4

Recovery Methods		
WebCode	**Method**	**Time**
U8GWPZ	Davis	Wipe on/off , repeat
	Turner's Reagent	Wipe on/off, repeat
	Fry's Reagent	Approx. 4minutes, Wipe on/off, repeat
	Davis	Wipe on/off
U98RVL	MagnaFlux	
	Davis	1 minute
UBE6JG	Magnetic Particle Inspection (MPI)	
UBVUU2	Acid Etch Method	30 secondes
	Fry's Reagent	30 secondes
	Fry's Reagent	30 secondes
	Acid Etch Method	30 secondes
UD2RAG	Acidic Ferric Chloride	apply in 3 times - few seconds each time
UDM6YU	Fry's Reagent	~5-10 minutes
	Turner's Reagent	~3-5 minutes
UEWACH	MagnaFlux	
UGN4B9	MagnaFlux	
	Fry's Reagent	15 minutes
ULFF9P	MagnaFlux	
UN7RRV	MagnaFlux	
	Turner's Reagent	2-3 seconds per swab
	Davis	2-3 seconds per swab
	Fry's Reagent	2-3 seconds per swab
V29KWE	MagnaFlux	
	Fry's Reagent	6 minutes x 2
V63LUL	MagnaFlux	
	Turner's Reagent	swabbed for approximately 5 minutes
	Fry's Reagent	swabbed for approximately 10 minutes
VN2GPX	Fry's Reagent	Rubbing / approximately 20 minutes
VN62G8	MagnaFlux	1 minute
	Fry's Reagent	30 minutes
VRG9FQ	MagnaFlux	
	Davis'	swabbed
	Turner's Reagent	swabbed
	Fry's Reagent	swabbed
VRHCKG	Fry's Reagent	1-2 minutes at a time.
VUNWB3	Acid Etch Method	Ferric Chloride and Distilled Water; 10 to 15 min

TABLE 4

Recovery Methods		
WebCode	**Method**	**Time**
VWWKVF	Acid Etch Method	25% Nitric - 1 minute
	Acid Etch Method	30% Sulfuric - 1 minute
	Fry's Reagent	1 minute
VXM973	MagnaFlux	
	Turner's Reagent	approximately one minute total
	Fry's Reagent	approximately one minute total
W3WEBT	MagnaFlux	
	Fry's Reagent	Less than 5 minutes
W49VN7	MagnaFlux	
	Fry's Reagent	15min Aprox.
W66BWW	Fry's Reagent	2 hours
W684RJ	Fry's Reagent	Repeated application via swabbing
WCLYGQ	Fry's Reagent	5 mins
WGVRHW	Magnetic Particle Inspection (MPI)	
	Davis's Reagent	Swiped with cotton swabs
	Turner's Reagent	Swiped with cotton swabs
	Fry's Reagent	Swiped with cotton swabs
WJ4EZN	MagnaFlux	3 minutes
	Davis Reagent	5 minutes
	Turner's Reagent	7 minutes
	MagnaFlux	3 minutes
	Turner's Reagent	10 minutes
	MagnaFlux	3 minutes
	Turner's Reagent	10 minutes
	MagnaFlux	3 minutes
	Turner's Reagent	7 minutes
	MagnaFlux	3 minutes
	Turner's Reagent	6 minutes
	MagnaFlux	3 minutes
	Turner's Reagent	5 minutes
	MagnaFlux	3 minutes
	Turner's Reagent	7 minutes
WKHW4U	Fry's Reagent	3 minutes
WM3VDH	Acid Etch Method	3 min
WP7NA2	MagnaFlux	
WXNXVD	MagnaFlux	
	Fry's Reagent	couple minutes

TABLE 4

Recovery Methods		
WebCode	**Method**	**Time**
WXNZKG	MagnaFlux	
	Acid Etch Method	Swabbed on and rubbed. A few minutes.
X924ZY	Turner's Reagent	continuously swabbed approx 3 mins
	Fry's Reagent	continuously swabbed approx 3 mins
	MagnaFlux	approximately 2 mins
	Turner's Reagent	continuously swabbed approx 5 mins
X9KQWV	Acid Etch Method	10 minutes
XB4CD3	Fry's Reagent	5 minutes
XQHKCK	MagnaFlux	
	Fry's Reagent	
	Turner's Reagent	
XTN9RB	MagnaFlux	~3 minutes
	Fry's Reagent	~5 minutes
Y83TMN	MagnaFlux	
	Davis Reagent	~3 minutes
	Turner's Reagent	~3 minutes
	MagnaFlux	
	Fry's Reagent	~3 minutes
	MagnaFlux	
	Fry's Reagent	~3 minutes
	25% Nitric Acid	~1 minute
YBKVUU	Magnetic Particle Inspection (MPI)	
YBP7WR	MagnaFlux	
	Turner's Reagent	~1.5 minutes
	Fry's Reagent	~15 seconds
YDNNPD	MagnaFlux	
YRBVPY	Magnetic Particle Inspection (MPI)	
	Turner's Reagent	less than a minute each time
	Fry's Reagent	less than a minute each time
	Davis' Reagent	less than a minute each time
YRQAWB	MagnaFlux	
	Davis reagent	1-2 minutes
	MagnaFlux	
	Turner's Reagent	1-2 minutes
	MagnaFlux	
	Fry's Reagent	3-5 minutes
	MagnaFlux	

TABLE 4

Recovery Methods		
WebCode	**Method**	**Time**
YT6MVE	MagnaFlux	
	Acid Etch Method	5 minutes
YVA8KY	MagnaFlux	
YXWRQ4	Electro-magnetic	
	Acid Etch Method	1.5 hour
YYQ3EY	Electro-acid	3x10min
	MagnaFlux	3x10 min
YZ3CCH	MagnaFlux	
Z3ZA22	MagnaFlux	
	Fry's Reagent	5 MINUTOS
	Turner's Reagent	5 MINUTOS
	Reactivo de Davis	5 MINUTOS
	Ácido Nítrico	5 MINUTOS
Z4UZ8F	MagnaFlux	
	Acid Etch Method	5 minutes
Z8YJEN	Magnetic Particle Inspection (MPI)	
Z9RGKA	Magnetic Particle Inspection (MPI)	
ZAPZZD	MagnaFlux	
	Acid Etch Method	
ZCB2KQ	MagnaFlux	
	Fry's Reagent	approx 30 minutes
ZG3J7B	MagnaFlux	
	Fry's Reagent	approximately 3 minutes
ZG76JH	MagnaFlux	
	Fry's Reagent	total time = approximately 1 minutes
	20% Nitric Acid	approximately 15 seconds
ZHHXGQ	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	15 minutes
ZLEQ8F	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	15 Minutes
	Davis Reagent	10 Minutes
ZPFUY2	MagnaFlux	
	Fry's Reagent	
ZQAK4G	Fry's Reagent	under 1 minute per swab
	20% Nitric Acid	under 1 minute per swab
	MagnaFlux	
ZTZJHE	Fry's Reagent	10-15 minutes

TABLE 4

Recovery Methods		
WebCode	**Method**	**Time**
ZV4GRL	Magnetic Particle Inspection (MPI)	
	Magnet	
	Magnet	
	Magnetic Particle Inspection (MPI)	
	Turner's Reagent	5-10 swipes of the swab
	Fry's Reagent	5-10 swipes of the swab
	Turner's Reagent	5-10 swipes of the swab
ZXP2WQ	MagnaFlux	
	Davis Reagent	less than five minutes
	Turner's Reagent	less than five minutes
	Fry's Reagent	less than one minute
ZXUCYN	Fry's Reagent	
ZY4NBY	MagnaFlux	
	Fry's Reagent	30 seconds
ZY6DKM	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	

Response Summary	**Participants: 324**
Recovery Methods	
Chemical Processing:	**275**
Magnetic Processing:	**209**

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
2WVT99	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.
3AYHJD	After cleaning the surface with acetone, we treated it with freshly prepared Fry's reagent. The reagent was applied to the surface by rubbing with cotton, then wiped off and the surface was wiped again with cotton moistened with distilled water.
3ETHVN	I use internal LIMS item numbers. The items are as follows: Agency Item 1 = LIMS Item 01-01 The aluminum standard was designated as LIMS Item 01-02, but was not analyzed.
47TDJX	The obliterated area was sanded with 220 and 400 grit sandpaper until mirror-like finish. After first application of Fry's chemical reagent waited approximate two minutes and the serial number was partially visible. The obliterated area was sanded and treated with Fry's chemical reagent for a second time, waiting approximate another two minutes and the serial number was restored. (K3DN59)
4AUEPM	No development observed with Davis' reagent. Almost immediate development with Frye's. Continued application to better resolve characters. Results were photographed.
4CHR96	How about one year using a substrate that isn't magnetic so the Acidic Ferric Chloride process can be performed?
4TMEGJ	if method didn't copy correctly pasted here for clarification of restoration Steel wool to target surface to polish, followed by white 'Ardrox' background spray (thin layer). 30 second magnetic use applied with Magnetic Particle before spraying black 'Ardrox' magnetic ink spray. Results unable to ascertain clear digits. Surface clean down before using wet/dry sanding (1st 600 grit followed by 1200 grit). Buff surface with steel wool to polish surface. FRYS Reagent then applied to reveal serial number. A number of images are obtained during the above processes to record along with any notes taken. Once the final result of the serial number is achieved, this would then be verified by another member who would also sign your notes and enter the date verified.
4W3RDZ	Not all the characters were formed properly using the electromagnetic method. The piece of metal remains hot once the electromagnetic method is completed. Fry is immediately applied to it, and all the characters are clearly revealed.
6XETXD	There is an arrow stamped into the surface indicating the orientation of the piece of metal. Attached are images of the piece of metal with an area of obliteration and the aluminum standard as received. The area of obliteration is very smooth so polishing was not necessary. During the Magnaflux application some characters/possible characters were revealed. The first character is a "K" alpha character. The second character could be a "B" alpha character or "3", "8", or "9" numeric character. The third character could be a "D" alpha character or "0" numeric character. The fourth character is a "N" alpha character. The fifth character could be a "B" alpha character or "3", "5" numeric character. The sixth character could be a "D" alpha character or "3", "8", "9", or "0" numeric character. See attached image. During/after chemical processing the characters "K3DN59" were recovered. See attached images. Area of obliteration cleaned with acetone and covered with Rem Oil after restoration process was complete to prevent corrosion. [Reference photos were not provided by this participant.]

TABLE 5

WebCode	Additional Comments
7BZKYT	Because the piece was magnetic I first used Magna Flux without any sort of smoothing just to see if something would appear before I was to take away any metal. I was able to start to view something and increased the size/power of magnet and was able to view and capture the obliterated serial number.
7HVM26	The MPI method did show characters however, they were not as clear as the acids Davis, Turners, and Frys ended up revealing the characters.
7LWQTR	Stereoscope used (microscope)
7XAFKN	I began with MPI with Magnaflux prior to any preparation. I did see characters, so I then moved onto sanding with sand paper with 100 and 400 grit and repeated MPI with Magnaflux. This was all prior to chemical etching.
8QKTAW	Anyone
96397M	The second digit appeared somewhat blurry. In addition, no equipment was used, neither sandpaper nor acid.
9DD8KC	Alternated Fry’s reagent and Turner’s reagent after initial chemical etch with Davis reagent.
9YHM69	Magnaflux was used to determine approximate location of obliterated characters. Magnaflux and chemical restoration was attempted prior to polishing. Magnaflux and chemical restoration was used alternatively throughout the restoration process. Total time using acidic chemicals was approximately 20 minutes
BJTL3Y	The Item 1 obliterated serial number was chemically/magnetically processed and restored to read “K3DN59”.
CGNBQX	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.
D98XPC	All characters were clearly visible using the magnetic particle inspection method.
DBCRZ3	The restoration processed involved multiple reagents, including Davis, Turners, Modified Fry's, and Ferric Chloride. The characters showed up with Modified Fry's, but the characters had a better contrast with Ferric chloride.
EAXM34	Initially used 50% Fry's, but bar stock showed little reactivity. Changed reagent to 100% Fry's. Full serial number is better visualized with naked eye after restoration.
F22AHU	Magnaflux/Electro-magnet applied to develop: K*D***. Acid Etchants applied to develop: K3DN59.
FE7T9G	The Fry's Reagent was applied with cotton-tipped applicators for two-minute intervals, 5 times.

TABLE 5

WebCode	Additional Comments
GMFA98	Serial Number Restoration Process; PPE: Lab coat, disposable latex gloves and protective eye wear. PE: Chemical Fume hood in Workshop. Sample was magnetic and also reacted to the Nitric Acid Spot Test using 10% Nitric Acid. Brown coloration inside the drop. Steel Determined to be Alloy steel/carbon steel. Sample suspiciously has a lustre similar to stainless steel. Method of obliteration of serial number identified as 'milling' due to uniformity of metal removal supported by presence of circular cutting marks. The milling finish was very fine therefore there was no surface preparation needed for MPR or Chem Etching. Sample sprayed with Crack Test Products – CTW6 Fast Dry White Background and positioned between articulated legs of ElectroSpect Testing Systems make, Model #ES-X serial number 20849, "Ferrous Probe". Specimen sprayed with Crack Test Products – CTB3 Magnetic Black Ink and Ferrous Probe activated. The alphanumeric sequence "K3DN59" visualised. Heat and 33% Hydrochloric acid were alternately applied to the area where the six digit serial number K3DN59 was re-visualised.
HG6QUU	Multiple applications of each reagent were conducted before moving on to the next reagent. The Dremel was utilized between the Turner's Reagent and Fry's Reagent applications.
JX4XBK	The magnetic method was not very satisfactory in revealing the obliterated sequence; the acid and FRY method was performed for double corroboration of the sequence and also the acid-FRY method that is used more in our work área.
KF6ZRR	One (1) metal bar stock sample. Test sample is approximately 2.5 inches x 1 inch in size. Received in tan envelope marked "Test No. 25-5250 Item 1". Test sample was scribed CTS 25-5250C 25-0002938.
LGRZ36	Background noise interference from stamping with too much pressure was observed around characters.
MNLRN4	This proficiency was not representative of actual casework in that the obliteration method was uncommon and the number was uniformly obliterated which resulted in a simple, easy restoration.
NLJC99	After sanding, we cleaned the worked area with acetone.
NQRBNL	The Magnaflux technique was applied to the item and the characters were mostly able to be observed. The area was then polished lightly with a Dremel tool. After a light polishing Magnaflux was once again applied to the area and the characters were all able to be observed.
P33PY7	Submission SNR1 consists of item Aluminum Standard and item 1. Item Aluminum Standard is a non-magnetic piece of metal with the numbers "1234567890" and the letters "ABCDEFHJKN" stamped on it. Not further analyzed. Item 1 is a magnetic piece of metal with an obliterated area on one side. Using Magnaflux, various grits of sandpaper, and chemical etching, I restored the serial number on item 1 to K3DN59.
QGFKR8	Turner's reagent was applied to the obliterated serial number and left to sit for 5 minutes, then massaged with a cotton swab. This process was repeated three times before increasing acid strength. Fry's reagent was applied to the obliterated serial number and left to sit for 30 seconds, then massaged with a cotton swab. This process was repeated six times. The obliterated serial number was restored.
VUNWB3	All methods we used were unable to retrieve the serial number. We were going to use fry reagent, but we didn't have enough time to prepare it and try it.
X924ZY	the last use of turners was to attempt to obtain a viable picture for camera.
X9KQWV	The original serial number was restored and read as K3DN59.

TABLE 5

WebCode	Additional Comments
YRBVPY	Item 1 was processed until pitting of the metal occurred and the alpha-numerics became harder to read. The last number appeared to be a 9 however I was unable to determine if the bottom portion of the numeric was missing the closed loop of an 8.
YXWRQ4	Both methods, the electro-magnet as well as the acid etching method, worked fairly well. The serial number was visually clealry observable with both methods.

-End of Report-
(Appendix may follow)

Collaborative Testing Services ~ Forensic Testing Program

Test No. 25-5250: Serial Number Restoration

DATA MUST BE SUBMITTED BY **May 12, 2025, 11:59 p.m. EDT** TO BE INCLUDED IN THE REPORT

Participant Code: U1234A WebCode: HMT2Y4

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 available 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 bar stock to represent orientation.

Items Submitted (Sample Pack SNR1):
Item 1: A piece of cold rolled steel bar stock with suspected obliterated serial number.

1.) Please record the restored characters below.

The serial number on this material consists of 6 characters.

Item 1:

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

Note: *Please use appropriate punctuation to indicate the end of sentences, sections, and statements in the free-form space below. Extra spacing and returns used for separation within your text will not transfer and may cause your information to be illegible in the Summary Report. The use of lists and tabular formats to deliver information is also cautioned against, as these do not transfer.*

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

Note: *Please use appropriate punctuation to indicate the end of sentences, sections, and statements in the free-form space below. Extra spacing and returns used for separation within your text will not transfer and may cause your information to be illegible in the Summary Report. The use of lists and tabular formats to deliver information is also cautioned against, as these do not transfer.*

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)