



## **Serial Number Restoration**

### **Test No. 24-5251 Summary Report**

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Each sample set contained a piece of bar stock with an obliterated serial number and a piece of aluminum bar stock intended as a standard for the size, shape, and positioning of the stamped characters. Participants were asked to restore the obliterated serial number using their existing protocols. Data were returned from 237 participants and are compiled into the following tables:

	<u>Page</u>
<a href="#"><u>Manufacturer's Information</u></a>	<u>2</u>
<a href="#"><u>Summary Comments</u></a>	<u>3</u>
<a href="#"><u>Table 1: Recovered Characters</u></a>	<u>4</u>
<a href="#"><u>Table 2: Conclusions</u></a>	<u>14</u>
<a href="#"><u>Table 3: Sample Preparation</u></a>	<u>26</u>
<a href="#"><u>Table 4: Recovery Methods</u></a>	<u>38</u>
<a href="#"><u>Table 5: Additional Comments</u></a>	<u>57</u>
<a href="#"><u>Appendix: Data Sheet</u></a>	

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

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

**SAMPLE PREPARATION:** Each piece of cold rolled steel bar stock (Item 1) was stamped with six characters (F7C10A), along with an upward arrow for orientation, and then obliterated by a grinding machine. Additionally, a piece of aluminum bar stock was included in the sample set as a reference standard with the alphanumeric characters 0-9 and A-F, H, J, K, and N. The characters were stamped in the same font and size as those on the steel bar stock.

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

**VERIFICATION:** Two of the three predistribution results were consistent with each other and the manufacturer's preparation information. The remaining predistribution laboratory restored five of the six characters, noting that the fifth character could be "C or 0." Chemical restoration methods were used from all laboratories.

Character 1	Character 2	Character 3	Character 4	Character 5	Character 6
F	7	C	1	0	A

## **Summary Comments**

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This test was designed to allow participants to assess their proficiency in the restoration of an obliterated serial number. Participants were supplied with one piece of bar stock with an obliterated serial number and a piece of aluminum bar stock intended as a standard for the size, shape, and positioning of the stamped characters. The serial number to be restored consisted of six characters (F7C10A). Refer to the Manufacturer's Information for preparation details.

In Table 1 Recovered Characters, 201 of the 237 responding participants (85%) restored all six characters. Twenty participants restored five of the six characters and of those, nine participants reported two or more options for one character. Nine participants restored four of the six characters and of those, three participants reported two or more options for at least one character. Of the remaining seven participants, five participants restored three of the six characters and the remaining two participants could not restore any characters. It was noted that character 3 (C) was more difficult to restore. Of the 29 participants reporting inconsistently for character 3 or leaving it blank, 20 reported that the character could have been at least one of the following characters: 6, 0, C, O, or G.

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

# Recovered Characters

Please record the restored characters below.

TABLE 1

Recovered Characters						
WebCode	Character 1	Character 2	Character 3	Character 4	Character 5	Character 6
236X98	F	7	C	1	0	A
28JD2K	F	7	C	1	0	A
2PGVQE	F	7	*	1	#	A
2X9BFJ	F	7	C	1	0	A
3267UC	F	7	C	1	0	A
38UN73	F	7	C	1	0	A
3HV3CU	F	7	C	1	0	A
3KGXT8	F	7	C	1	0	A
3KM72V	F	7	C	1	0	A
3KX8G3	F	7	C	1	0	A
3LW3EC	F	7	C	1	0	A
3Q6QQT	F	7	C	1	0	A
3TUVM7	F	7	C	1	0	A
4M36F2	F	7	C	1	0	A
4RXYCH	F	7	C	1	0	A
68CWHB	F	7	C	1	0	A
693THG	F	7	C	1	0	A
6BLUD4	F	7	C	1	0	A
6CH27G	F	7	C	1	0	A
6E7GE4	F	7	C	1	0	A
6FXVKT	F	7	C	1	0	A
6LJPF6	F	7	C	1	0	A
6QB2B2	F	7	C	1	0	A
6QH3JH	F	7	C	1	0	A

TABLE 1

Recovered Characters						
WebCode	Character 1	Character 2	Character 3	Character 4	Character 5	Character 6
6RRY32	F	7	C	1	0	A
6VXA8H	F	7	C	1	0	A
6XGB34	F	7	C	1	0	A
6ZPLZT	F	7	C	1	0	A
77MVKQ	F	7	C	1	0	A
79VTA2	F	7	C	1	0	A
7FX7Q	F	7	C	1	0	A
7JTQ28	F	7	C	1	0	A
7NR3W8	F	7	C	1	0	A
7P4R7B	F	7	C	1	0	A
7UD9FY	F	7	C	1	0	A
7VQHT7	F	7	C	1	0	A
7WKHJP	F	7	C	1	0	A
82DRFA	F	7	0 / C	1	0	A
836N64	F	7	C	1	0	A
8PCD8W	F	7	C	1	0	A
8U93N4	F	7	C	1	0	A
8WZ223	F	7	C	1	0	A
8XTZ48	F	7	C	1	0	A
94BTWV	F	7	C	1	0	A
94TTM2	F	7	C	1	0	A
9724J6	F	7	C	1	0	A
972UYZ	F	7	C	1	0	A
9A233A	F	7	C	1	0	A
9AV3UT	F	7	C	1	0	A
9AYKWY	F	7	C	1	0	A

TABLE 1

Recovered Characters						
WebCode	Character 1	Character 2	Character 3	Character 4	Character 5	Character 6
9M8Z6P	F	7	C	1	0	A
9MBCZ	F	7	C	1	?	A
9NGDK6	F	7	C	1	0	A
9V24FD	F	7	C	1	0	A
A3EL2J	F	7	C	1	0	A
A3WVRY	F	7	C	1	0	A
A8M63X	F	7	?	1	0	A
A9NX3Q	F	7	C	1	0	A
AFKRZP	F	7	C	1	0	A
AH6NF3	F	7	C	1	0	A
AHBU8X	F	7	C	1	0	A
ALPBG3	F	7	C	1	0	A
AQ6WAA	F	7	C	1	0	A
AU684N	F	7	C	1	0	A
AWQ4J2	F	7	-	1	0	A
AWVABX	F	7	C	1	0	A
AX6JYN	F	7	C	1	0	A
AYEB7J	F	7	C	1	0	A
B3PX3L	F	7	C	1	0	A
B48WEX	F	7	*	1	0	A
B4AHAE		7	0		0	A
BH69KG	F	7	C	1	0	A
BYENCC	F	7	C	1	0	A
C2A4WK	F	7	C	1	0	A
C7A66U	F	7	C	1	0	A
C83XZD	F	7	C	1	0	A

TABLE 1

Recovered Characters						
WebCode	Character 1	Character 2	Character 3	Character 4	Character 5	Character 6
C9U7YF	F	7	C	1	0	A
CKP6WE	F	7	C	1	0	A
CWKG87	F	7		1		A
CXCDWZ	F	7	C	1	0	A
CY7DMJ	F	7	C	1	0	A
D6AEPY	F	7	C	1	0	A
DBHQNK	F	7	C	1	0	A
DEXFRU	F	7	C	1	0	A
DF969L	F	7	C	1	0	A
DFCP62	F	7	C	1	0	A
DJXAB	F	7	C	1	0	A
DNDBJ4	F	7	C	1	0	A
DTF9F2	F	7	C	1	0	A
DWDGYP	F	7	C	1	0	A
DXVF4Z	F	7	C	1	0	A
E4D9T6	F	7	C	1	0	A
EC8ENR	F	7	0	1	0	A
ECLZXT	F	7	C	1	0	A
EDXPDY	F	7	C	1	0	A
EECBM2	F	7	C	1	0	A
EERFJD	F	7	C	1	0	A
EG2H8X	F	7	C	1	0	A
EHTJBZ	F	7	C	1	0	A
EWN3KW	F	7	C	1	0	A
EWT9DT	F	7	*	1	0	A
EY2KR9	F	7	C	1	0	A

TABLE 1

Recovered Characters						
WebCode	Character 1	Character 2	Character 3	Character 4	Character 5	Character 6
F7EWKZ	F	7	C	1	0	A
F97RAU	F	7	C	1	0	A
FBAT7K	F	7	C	1	0	A
FDXYR3	F	7	C	1	0	A
FPQLXX	F	7	C	1	0	A
FYYZWT						
G7TRHR	F	7	C	1	0	A
G9FBJP	F	7	C	1	0	A
G9LBR7	F	7	C	1	0	A
GH6YFD	F	7	C	1	0	A
GPLLB3	F	7	C	1	0	A
GTMQQ9	F	7	C	1	0	A
H2WDGN	F	7	C	1	0	A
HB2EQM	F	7	C	1	0	A
HBJC8T	F	7	C	1	0	A
HDN2A3	F	7	*	1	0	A
HF934N	F	7	C	1	0	A
HFF3D6	F	7	C	1	0	A
HLGCJX	F	7	C	1	0	A
HN7Q3F	F	7	C	1	0	A
HN9BXV	F	7	C	1	0	A
HQZACU	?	7	C	?	0	A
HV7RKV	F	7	C	1	0	A
J668LJ	F	7	C	1	0	A
J6D3FR	F	7	C	1	0	A
J744JU	F	7	C	1	0	A



TABLE 1

Recovered Characters						
WebCode	Character 1	Character 2	Character 3	Character 4	Character 5	Character 6
J9ALHP	F	7	C	1	0	A
J9AV3U	F	7	C	1	0	A
JE2WRN	F	7	C	1	0	A
K2PYXK	F	7	?	1	0	A
KFPRR2	F	7	C	1	0	A
KH9TLN	F	7	C	1	0	A
KHUCGM	F	7	C	1	0	A
KREXCJ	F	7	C	1	0	A
KX7ZJP	F	7	C	1	0	A
L3WPLE	F	7	C	1	0	A
L46WQT	F	7	C	1	0	A
LENBRA	F	7		1		A
LM3ACM	F	7	C	1	0	A
LT9UPJ	F	7	C	1	2	A
LZPG9N	F	7	C	1	0	A
MABQKN	?	7	C	1	0	A
MB944A	F	7	C	1	0	A
MCZ7TB	F	7	C	1	0	A
MH48QJ	F	7	C	1	0	A
MKCF3P	F	7	C	1	0	A
MNBRXP	F	7	C	1	0	A
MRQ98U	F	7	0	1	0	A
MTNC6B	F	7	C	1	0	A
MTQZLP	F	7	C	1	0	A
MXFNXL	F	7	C	1	0	A
MXH86X	*	7	*	1	0	*

TABLE 1

Recovered Characters						
WebCode	Character 1	Character 2	Character 3	Character 4	Character 5	Character 6
MXJ4ET	F	7	C	1	0	A
MXXTEY	F	7	C	1	0	A
MYBAKL	F	7	C	1	0	A
N6FH DY	F	7	C	1	0	A
N9BCBZ	F	7	C	1	0	A
NDQKYZ	F	7	C	1	0	A
NEJKQJ	F	7	C	1	0	A
NFBLUL	F	7	C	1	0	A
NFE27M	F	7	C	1	0	A
NJDJ6E	F	7	C	1	0	A
NMCVZE	F	7	C	1	0	A
NVPXAM	F	7	C	1	0	A
NXDDGA	F	7	C	1	0	A
NXFYDP	F	7	C	1	0	A
NYQT6H	F	7	C	1	0	A
P69H6J	F	7	0	1	0	A
P6DZ8N	F	7	C	1	0	A
PQRK4N	F	7	C	1	0	A
QBBAQL	F	7	C	1	0	A
QKG6TQ	F	1	?	1	?	A
QLUNPG	F	7	C	1		A
QM27ND	F	7	C	1	0	A
QNL2QL	F	7	C	1	0	A
QQP97K	F	7	C	1	0	A
R23WAH	F	7	C	1	0	A
R6LWMC	F	7	0	1	0	A

TABLE 1

Recovered Characters						
WebCode	Character 1	Character 2	Character 3	Character 4	Character 5	Character 6
R727L6	F	7	C	1	0	A
R92NBK	F	7	C	1	0	A
R9L32H	F	7	C	1	0	A
RCGWYJ	F	7	C	1	0	A
RCLBCK	F	7	C	1	0	A
RJ26A2	F	7	C	1	0	A
RJH7AH	F	7	C	1	0	A
RVCKAF	E	7	?	1	?	A
RX3LDH	F	7	C	1	0	A
RZNLFJ	F	7	C	1	0	A
T2ZLT6	F	7	C	4	*	A
T6WDYG	F	7	C	1	0	A
T6YV6T	F	7	C	1	0	A
TEPGA6	F	7	*	1	*	A
TGFHGE	F	7	C	1	0	A
TGRHBM	F	7	C	1	0	A
TJCDR2	F	7	6	1	0	A
TNAWTY	F	7	C	1	0	A
TWMNLH	F	7	?	1	0	A
TXHA9H	F	7	C	1	0	A
TZMUZN	F	7	C	1	0	A
U4Z83M	F	7	C	1	0	A
UACV3J	F	7	C	1	0	A
UEJJFL	F	7	C	1	0	A
UL9BEM	F	7	C	1	0	A
UXTNVH	F	7	C	1	0	A

TABLE 1

Recovered Characters						
WebCode	Character 1	Character 2	Character 3	Character 4	Character 5	Character 6
UZ3QPT	F	7	C	1	0	A
V8DGKJ	F	7	C	1	0	A
VHFFUE	F	7	C	1	0	A
VLZEVF	F	7	C	1	0	A
WVMJ2U	F	7	C	1	0	A
VZVQGD	F	7	?	1	?	A
WBQJ39	F	7		1		A
WDHHF8	F	7	C	1	0	A
WFLBA7	F	7	C	1	0	A
WNGBQJ	F	7	C	1	0	A
WQPEMF	F	7	C	1	0	A
WYZJXL	F	7		1		A
WZ9XYZ	F	7	C	1	0	A
XBD3VM	F	7	C	1	0	A
XE87FE	F	7	C	1	0	A
XE9U2X	F	7	C	1	0	A
XNXHYL						
XRUBNB	?	7	?	1	0	?
YABREA	F	7	C	1	0	A
YGRANB	F	7	C	1	0	A
YJFYUA	F	7	C	1	0	A
YJJ93A	F	7	0	1	0	A
YNANMB	F	7	C	1	0	A
Z7NJHU	F	7	C	1	0	A
ZAAE6M	F	7	C	1	0	A
ZGNA2G	F	7	C	1	0	A

TABLE 1

Recovered Characters						
WebCode	Character 1	Character 2	Character 3	Character 4	Character 5	Character 6
ZHN46F	F	7	C	1	0	A
ZHNZFC	F	7	C / 0	1	0	A
ZLME2F	F	7	C	1	0	A
ZMFBPA	F	7	C	1	0	A
ZYFBPF	F	7	C	1	0	A

Response Summary						Participants: 237
	Character 1	Character 2	Character 3	Character 4	Character 5	Character 6
	F	7	C	1	0	A
Total	229	234	208	232	221	233
Percent	96.6%	98.7%	87.8%	97.9%	93.2%	98.3%

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

# Conclusions

TABLE 2

WebCode	Conclusions
236X98	Serial number restoration Lab Item: #1-2 Restoration Results: F7C10A
28JD2K	Examination of the submitted cold rolled steel bar stock found the manufacturer's serial number to have been obliterated. The original, obliterated serial number was restored to read "F7C10A".
2PGVQE	The obliterated serial number was partially restored to read F7*1#A (* represents a C, 0, or 6 and # represents a C, 0, 6, or 9).
2X9BFJ	The submitted piece of cold rolled steel bar stock (Exhibit 1.1) was found to have an obliterated serial number. Mechanical and Chemical processing of the submitted Exhibit 1.1 bar stock revealed that the original serial number is F7C10A. No further analysis was conducted on the submitted evidence at this time.
3267UC	Recovered Characters: F7C10A
38UN73	The serial number was able to be fully restored.
3HV3CU	Forensic restoration methods were performed and a series of previously applied characters were restored. Those characters read: F7C10A.
3KGXT8	Using standard laboratory techniques, the obliterated serial number on Item 001-01 was restored to read "F7C10A". No examination performed on the Item 001-02 aluminum standard.
3KM72V	The serial number on the submitted plate was defaced, was magnetically processed and restored to read F7C10A.
3KX8G3	1. The identification of the steel bar stock has been obliterated. 2. The recovered characters of the steel bar stock with Fry reagent was F7C10A
3LW3EC	The serial number on the metal plate (Exhibit 01) was mechanically and chemically treated and restored to read F7C10A. The stamped metal plate (Exhibit 02) was documented and photographed; however, no further analysis was performed.
3Q6QQT	Erased serial number restored to read F7C10A.
3TUVW7	Recovered Characters: F7C10A
4M36F2	The serial number was fully restored using chemical restoration techniques and determined to be F7C10A.
4RXYCH	As a result of processing the cold rolled steel bar stock for Serial Number Restoration, the following alphanumeric characters were observed: "F7C10A".
68CWHB	1) Examination of Exhibit 1 revealed one ferromagnetic steel bar with a 25mm x 38mm 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 observed: F 7 C 1 0 A.
693THG	Standard restoration techniques revealed the following characters: F7C10A
6BLUD4	The piece of cold rolled steel bar stocks' (Item #1) obliterated serial number located on the front of the plate was chemically processed and restored to read "F7C10A".
6CH27G	Lab Item 1: One piece of magnetic steel bar stock The obliterated serial number on Lab Item 1 was restored to read: F7C10A
6E7GE4	Serial number restoration and recovery techniques were applied to the defaced area of the bar stock (Item 001). The serial number of the bar stock was restored to read: F7C10A
6FXVKT	Using the magnetic particle restoration and acid-etch methods, the number on the steel bar stock (Item 1) was completely restored as " F 7 C 1 0 A ". No further examinations performed on the aluminum standard.

TABLE 2

WebCode	Conclusions
6LJPF6	Restoration techniques applied to the steel sample provided ITEM 1 revealed a serial number consistent with the following sequence: F7C10A
6QB2B2	The item 1 serial number was magnetically/chemically restored to read "F7C10A".
6QH3JH	The following characters were recovered: F7C10A
6RRY32	The piece of cold rolled steel bar stock's (Item 1) obliterated serial number located on the front of the plate was chemically processed and restored to read "F7C10A".
6VXA8H	The obliterated serial number located on the Exhibit 1.1 piece of metal was processed. The characters were concluded to be F7C10A. No Firearms or Toolmark examinations were requested or conducted on Exhibit 1.2.
6XGB34	The serial number on the piece of bar stock was determined to be F7C10A.
6ZPLZT	Examined the aluminum bar stock marked "Aluminum Standard". The obliterated serial number located on the aluminum standard was polished and chemically restored to read "F7C10A".
77MVKQ	The serial number of the piece of cold rolled steel bar, described in piece 1, corresponding to Item 1, was restored and correspond to: F7C10A.
79VTA2	Upon electrochemical treatment on the filled surface, the number restored is F7C10A. Hence, I am the opinion that the original number is "F7C10A".
7FX7Q	The serial number of the piece cold rolled steel bar stock, described in item 1, was restored and correspond to: F7C10A.
7JTQ28	Magnetic and chemical serial number restoration techniques were applied to Item 1. The serial number of F7C10A was restored. Item 2, the aluminum standard block with alphanumeric exemplars, was used for reference only.
7NR3W8	Initial examination of Item 1 shows it has an obliterated serial number. The obliterated area was polished, magnetically and chemically treated and the following characters were noted: F7C10A.
7P4R7B	Physical and chemical methods were used to process Item 1. The complete restored serial number is F7C10A.
7UD9FY	The conclusions in this section are the opinions of the undersigned examiner. When a conclusion is verified, it is also the opinion of the verifier. Visual examination and chemical treatment restored the obliterated serial number on Item 1 to read "F7C10A." Item 1 was referred to ATF for a Firearms Trace and checked for stolen through [Database], a computer search that resulted in a return that indicated "No Record" for this make, model and caliber. Item 1A was inventoried. All items of evidence are being returned.
7VQHT7	Serial number restored
7WKHJP	The obliterated serial number located on the steel bar was mechanically and chemically processed. The obliterated serial number was restored to read "F7C10A".
82DRFA	Item 1 The serial number was restored to read: F 7 ? 1 0 A. The third character could be a 0 or a C.
836N64	Items – Description/Visual Examination. Item 1: One (1) piece of cold-rolled steel bar stock with suspected obliterated serial number. Examination Results: Item 1 (cold-rolled steel bar stock). Using chemical and physical serial number restoration techniques, an attempt was made to restore the obliterated serial number with the following results: Serial Number: F 7 C 1 0 A was restored on Item 1.
8PCD8W	Examined the specimen marked Item 1. The obliterated serial number was magnetically and chemically processed and restored to read F7C10A.
8U93N4	I restored the obliterated characters to F 7 C 1 0 A using sanding, chemical etchants, and magnetic particle inspection.
8WZ223	Using standard laboratory techniques, the obliterated serial number on item 001-01 was restored to read "F7C10A". Item 001-02 was used for reference.

TABLE 2

WebCode	Conclusions
8XTZ48	The serial number on the piece of metal (Exhibit 1) was mechanically and chemically treated and restored to read F7C10A. No analysis was performed on the piece of metal (Exhibit 2).
94BTVW	The steel bar stock in Submission #1 with the obliterated serial number was visually examined and chemically processed to restore the serial number. Chemical restoration revealed the serial number to be F7C10A.
94TTM2	The serial number of the steel bar stock, Exhibit ITEM 1, was restored and observed to be "F7C10A"
9724J6	Restoration Results F7C10A
972UYZ	Restoration Results: 1-1: F7C10A
9A233A	Visual examination and chemical treatment of the serial number area in the center of the barstock, Item 1A, reveal the following number: F7C10A. Item 1B was inspected to verify and document contents. No analysis was performed on the item listed.
9AV3UT	After using the sand papers to sand the steel bar and the REGULA 7505M device the serial number was found
9AYKWY	Serial number restoration was performed on item 1. The serial number F7C10A was restored.
9M8Z6P	The defaced serial number was magnetically processed and restored to read "F7C10A".
9MBJCZ	The obliterated serial number on Item 1 was partially restored to read F7C1?A, with the question mark representing an unrestorable character.
9NGDK6	The obliterated area on Item 1 was sanded and polished, magnetically and chemically treated and the following characters were observed: F7C10A.
9V24FD	F7C10A
A3EL2J	TEST No. 24-5251 ITEM 1: The following restored serial number: "F7C10A", is Original.
A3WVRY	Restoration Results: F7C10A
A8M63X	The obliterated serial number, located on the cold rolled steel bar stock, was chemically processed and partially restored to read "F7?10A." The question mark (?) most likely represents a "C" but also could be a "6" or "G."
A9NX3Q	Restoration by chemical etching revealed the original serial number to be "F7C10A".
AFKRZP	The obliterated area on item 1 was physically and chemically restored to read: F 7 C 1 0 A. An aluminum block with numeric and alpha characters was received and used as a reference standard.
AH6NF3	Smoothed by Sand paper and chemically treated by Turner's and Fry's reagents.
AHBU8X	The test sample plate was subjected to magnetic particle inspection and a series of chemical etchings. The obliterated serial number was fully restored to read: F 7 C 1 0 A.
ALPBG3	Item #1 was submitted with an obliterated area. The characters "F7C10A" were restored on the obliterated area.
AQ6WAA	1. Examination of Exhibit 1 revealed a piece of metal with an obliterated area. Standard serial number restoration techniques were used and the following characters were observed: F 7 C 1 0 A.
AU684N	Serial Number Restoration Analysis: Methodology: Physical (Visual Examination). Microscopy (Comparison Microscope). MPI- Magnetic Particle Inspection. Serial number restoration procedures revealed the serial number on Item 1, the barstock, to be: F 7 C 1 0 A
AWQ4J2	The serial number on the bar stock, Exhibit 1, was determined to be F7_10A, where "_" is a C or 0.
AWVABX	Visual inspection of the Item 1 surface revealed a defaced area. The defaced area was magnetically processed, resulting in a full recovery of the Item 1 serial number. The recovered number reads as follows: F7C10A.



TABLE 2

WebCode	Conclusions
AX6JYN	Serial Number Restoration Analysis: Methodology: Physical (Visual Examination, Sanding). Microscopy (Comparison Microscope). MPI- Magnetic Particle Inspection. Chemical (Reagent Etching). Serial number restoration procedures revealed the serial number on Item 1, the steel bar stock, to be: F 7 C 1 0 A
AYEB7J	TEST No. 24-5251, ITEM 1: The following restored serial number: "F7C10A", is Original.
B3PX3L	A chemical etching process was used to restore a serial number which was identified as being F7C10A.
B48WEX	Through chemical means, the obliterated serial number on the steel bar stock in Item #1 was partially restored and found to be F 7 * 1 0 A. The character represented by an asterisk is either the letter C or the number 0.
B4AHAE	Serial number restoration was attempted on the 001.001 bar stock. The complete serial number could not be restored. The characters _70_0A were restored. The "_" represents an unknown character.
BH69KG	In order to detect the number on the engraved surface, the surface is examined using physical, electromagnetic and chemical methods; It has been determined that the number consists of letters and numbers that can be read as 'F7C10A'. Kind Regards
BYENCC	Standard restoration techniques revealed the following characters on Item #1, "F7C10A".
C2A4WK	The magnetic block was treated with 25% Nitric Acid and Acidified Ferric Chloride to reveal serial number successfully restored and determined to be F7C10A.
C7A66U	Examinations showed the serial number of Item 1 to be obliterated. The serial number was restored using magnetic particle inspection, mechanical polishing, chemical etching techniques and was found to be: F7C10A.
C83XZD	The Item 1 obliterated serial number, located on the mid-section of the bar, was restored to read "F7C10A".
C9U7YF	The deleted or altered series was restored and the series was determined to be F7C10A
CKP6WE	Item # 1: The serial number is milled off. The serial number (F7C10A) was restored by acid etching. The Modified Fry's reagent and the Nickels & Alloy's Reagent were used for the restoration. .... Evidence Photographs: This submission is digital photo media containing 2 photographs, documenting the defaced serial number of the Item # 1. .... The Test submission will be forwarded to the Firearm's Evidence Room. The digital photographs were uploaded to the Foray Server.
CWKG87	Visual examination and chemical treatment of the serial number area on the bar stock, Item 1.B, reveal the following partially restored number: F 7 _ 1 _ A. Item 1.A was submitted as a reference standard for comparison to Item 1.B. No analysis was performed on Item 1.A.
CXCDWZ	Restoration Results: F7C10A
CY7DMJ	F7C10A was appeared on the steel bar during anaysis
D6AEPY	Restoration Results: F7C10A
DBHQNK	A serial number restoration was carried out on a piece of bar stock (Item 2402536/001) with an obliterated number. After the application of a chemical reagent, the following characters were developed - F7C10A. The characters were confirmed using a known reference sample of alphanumeric numbers used in the manufacturing process. The developed characters had similar font and size to the reference sample provided.
DEXFRU	the restored serial number is F7C10A
DF969L	Through the examination (microscopic and chemical restoration process) carried out, the determination was: 1. The serial number on the cold rolled steel bar stock, described in Item 1, was restored and corresponds to F7C10A. [Initials] September/06/2024
DFCP62	Methods Used: Polishing and Chemical Etching The serial number of the metal bar, Lab Evidence#001-A1, Property# 1, was restored and determined to be F7C10A.

TABLE 2

WebCode	Conclusions
DJCXAB	The characters F7C10A were restored on the 001.001 bar stock. This should be considered the complete serial number.
DNDBJ4	1. Examination of Exhibit 1 revealed a ferromagnetic piece of metal, rectangular in shape. Exhibit 1 measured 63mm (Length) by 25mm (Width) by 6.29mm (Height). The center of the Exhibit 1 has an obliterated area 38 mm (Length) by 25 mm (Width). The obliterated area was consistent with being caused by an abrasive type of tool; exact type of tool is undetermined. The obliterated area is not suitable for microscopic comparison. 2. The obliterated area of Exhibit 1 was restored, and the following characters were observed: F 7 C 1 0 A.
DTF9F2	The serial number on the metal plate (Exhibit 01) was mechanically treated and restored to read F7C10A. The metal plate (Exhibit 02) was documented and photographed; however, no further analysis was performed.
DWDGYP	Destructive method was applied to recover the serial number. Dremel tool was used to polish the surface (mirror finish). ETCHING SOLUTION was applied, after several attempts the serial number was recovered.
DXVF4Z	The Item 1 serial number was restored and found to be: F7C10A.
E4D9T6	1. The obliterated area on the Exhibit 1 metal block was processed using standard serial number restoration techniques. The following characters were observed: F 7 C 1 0 A. 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.
EC8ENR	The obliterated serial number on the Item 1 metal bar stock was restored to read F7010A by using the Magnaflux method.
ECLZXT	After application of the magnetic particle inspection and acid etch methods, the serial number of Item 1 (bar stock) was restored and interpreted as F7C10A.
EDXPDY	Standard restoration techniques revealed the characters "F7C10A".
EECBM2	The abovementioned serial number could be restored. It is to be noted, that the third character was barely visible, meaning that there is a slight possibility that this character is not a "C" as indicated above.
EERFJD	Using magnetic and chemical methods, the obliterated serial number located on the face of Item 001A was restored to read F7C10A.
EG2H8X	The Serial Number on Item #1 was obliterated. Polishing, magnetic particle inspection, and acid etching restoration techniques were used in an attempt to recover the serial number. The serial number was observed and found to be F 7 C 1 0 A .
EHTJBZ	The serial number was restored to read F7C10A.
EWN3KW	The serial number on the steel bar stock sample, Exhibit 1, was determined to be F7C10A.
EWT9DT	Item 001 was examined and found to have an obliterated serial number. Chemical and physical restoration procedures on item 001 revealed the following characters of the serial number: F 7 * 1 0 A. The asterisk represents a character consistent with "6" but could alternatively be "0" or "C".
EY2KR9	Date Worked 08/27/2024. The serial number is ground off. The serial number (F7C10A) 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.
F7EWKZ	A serial number restoration was attempted on the bar stock using chemical etching techniques. The serial number was restored to read F7C10A.

TABLE 2

WebCode	Conclusions
F97RAU	The serial number of the Item 01-01 steel bar stock was recovered to read "F7C10A".
FBAT7K	Upon chemical etching on the steel bar in Item 1, six characters "F7C10A" were revealed. The six characters were found to agree in style and size with the corresponding characters stamped on the aluminum standard.
FDXYR3	The serial number on Item 1 was restored to read F7C10A using magnetic particle inspection.
FPQLXX	A serial number restoration was performed on item 1-1, and the serial number was found to be: F7C10A.
FYYZWT	The serial number could not be restored, only shadows appeared. The serial number was probably milled too deeply or could also have been struck weakly.
G7TRHR	Item 1 A piece of cold rolled steel bar stock with suspected obliterated serial number. The serial number was chemically restored and found to be "F7C10A".
G9FBJP	The steel bar stock, specimen #1, was received in the laboratory with an obliterated serial number. Attempts to recover the obliterated serial number via chemical methods yielded the following serial number: F7C10A. All evidence will be returned to the Firearms Unit Vault upon completion of analysis.
G9LBR7	The following characters "F7C10A" were restored during serial number restoration
GH6YFD	La placa de acero inoxidable descrita como Evidencia-1, mantiene la serie limada, se le aplicó la solución para partículas magnéticas (MAGNAFLUX), logrando revelar la serie original F7C10A. [Requested translation was not provided by time of publication.]
GPLL3	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 "F7C10A".
GTMQQ9	Serial Number Restoration Results: Serial number restoration for Item 1 is: F7C10A Verified by/Date: FS XXXX on XX/XX/XX
H2WDGN	Examinations showed the serial number of Item 1.1 to be obliterated. The serial number was restored using magnetic and chemical etching techniques and was found to be: F7C10A.
HB2EQM	The chemical etching restoration process took numerous hours and only one character "A" was restored as a result. After unsuccessful restoration with chemical etching method, the metal sample was repolished, and magnetic particle inspection was performed. As a result, the obliterated serial number was fully restored to read "F7C10A".
HBJC8T	The entire serial number was removed by grinding. Approx. 0.4 mm was removed. The removed serial number could be visible again using the magnetic partikel methode (Magnetic Particel Inspection MPI)
HDN2A3	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 partially restored to read "F7*10A". The asterisk represents a "C" or a "0".
HF934N	Utilizing magnetic particle inspection (MPI) and chemical etching the obliterated serial number was restored to read "F7C10A".
HFF3D6	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 "F7C10A."
HLGCJX	The serial number on Exhibit 1 was restored to read F7C10A using magnetic particle inspection.
HN7Q3F	The serial number of the metal piece, described in piece 1, corresponding to "Item 1", was restored and corresponds to: F7C10A. [Initials] September 4, 2024
HN9BXV	The serial number for Item 1 was restored to read: F7C10A.
HQZACU	Restoration results are ?7C?0A where the "?" represents an unknown character.

TABLE 2

WebCode	Conclusions
HV7RKV	As received, the serial number on the steel bar was obliterated. Using chemical etching techniques, the serial number was restored to F7C10A. Please refer to Serial Number Restoration Worksheet for further information on the chemical restoration process. The firearm was photographed during the restoration process on 8/26/24. [Worksheet was not included with the report.]
J668LJ	A request has been made to determine if the obliterated serial number on the item submitted can be recovered. The serial number of the steel bar stock, SNR2, has been removed from one flat side. After application of the electromagnetic and the chemical process, I determined the serial marking of the steel stock bar, SNR2, to be F7C10A.
J6D3FR	Items – Description/Visual Examination. Item 1: One (1) piece of cold rolled steel bar stock with a suspected obliterated serial number. Examination Results: Using chemical and physical serial number restoration techniques, an attempt was made to restore the obliterated serial number with the following results: Serial Number: F 7 C 1 0 A was restored on Item 1.
J744JU	[No Conclusions Reported.]
J9ALHP	Restoration Results: F7C10A
J9AV3U	Restoration results: F7C10A
JE2WRN	Item 1 is a section of steel bar stock with an obliterated serial number. Using standard restoration techniques, the obliterated serial number on Item 1 was restored to read: F 7 C 1 0 A.
K2PYXK	[No Conclusions Reported.]
KFPRR2	The obliterated serial number on the bar stock (Item 1) was chemically restored and determined to be F7C10A.
KH9TLN	[No Conclusions Reported.]
KHUCGM	Item #1 (piece of cold rolled steel bar stock) was chemically processed. Its serial number was restored to read: F 7 C 1 0 A.
KREXCJ	[No Conclusions Reported.]
KX7ZJP	Standard restoration techniques revealed the following characters: F7C10A
L3WPLE	Standard serial number restoration techniques revealed the following latent characters: F7C10A.
L46WQT	The serial number on the metal plate (Exhibit 01) was chemically and mechanically treated and restored to read F7C10A. The metal plate (Exhibit 02) was documented and photographed; however, no further analysis was performed.
LENBRA	A partial serial number restoration was achieved, resulting in the characters F, 7, 1 and A being restored in positions 1, 2, 4 and 6 of a six character stamp sequence. The restored serial number sequence read: F7_1_A. While the restoration process restored partial, indistinct characters at positions 3 and 5 in the serial number sequence, there was insufficient detail present in the partially restored characters to allow a more meaningful interpretation of the original stamps (see additional comments - Page 3). [Participant report was not included. See Summary Report Additional Comments.]
LM3ACM	The piece of cold rolled steel bar stock's (Item 1) obliterated serial number located on the front of the plate was chemically processed and restored to read "F7C10A".
LT9UPJ	The obliterated serial number on Item 001-01 was restored to read F7C12A.
LZPG9N	Using standard laboratory techniques, the obliterated serial number on the Item 001-01 steel bar stock was restored to read F7C10A. No examination was conducted on the 001-02 Aluminum Standard.
MABQKN	The first character is most likely an "F" but may also be an "E".
MB944A	A magnetic particle test was undertaken on the sample, resulting in no identified characters being revealed. A chemical etching process was then undertaken to restore a serial number which was identified as being F7C10A

TABLE 2

WebCode	Conclusions
MCZ7TB	Item 1 was received with the serial number obliterated. Attempts to restore the serial number were made by acid etching. The serial number was restored to read: F7C10A.
MH48QJ	The section of metal bar stock Q1 (001.001) was visually analyzed and through polishing, magnetic and chemical processes was fully restored to read F7C10A. 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 09/05/2024.
MKCF3P	Restoration Results: F7C10A
MNBRXP	Serial Number Restoration Lab Item(s)# Restoration Results 1 F7C10A [Participant submitted data in a format that could not be reproduced in this report].
MRQ98U	Item 1 consists of a piece of steel with suspected obliterated serial number. The item has an area that have been ground down compared to the surrounding surface. Item 1 was examined following the laboratory's standard operating procedure for restoration of obliterated serial numbers. Prior to any other measure, examination of the ground-down area using the MagnaFlux method, indicated six evenly spaced positions that showed signs of the metal being compressed, consistent with having had a character stamped into the material. After polishing the surface of the of the ground down area, further MagnaFlux examination revealed characters in each of the six positions. These were interpreted as follows, from left to right: Position #1; Either the capital letter "F" (more likely) or the number "1" (one) (less likely, but cannot be excluded). Position #2; The number "7" (seven). Position #3; The number "0" (zero). Position #4; The number "1" (one). Position #5; The number "0" (zero). Position #6; The capital letter "A".
MTNC6B	On Monday, 19th August 2024, a serial number restoration/examination was carried out by Crime Scene Examiner [Name] at the [Laboratory] Crime Scene Examination Unit, Forensic Science Branch. Item description: Piece of cold rolled steel bar stock measuring 640mm x 250mm, with an arrow visible the left-hand side pointing upwards. No further numbers or symbols were visible. Examination process: Serial number restoration undertaken based on Method CS_MM_01. Dry sandpaper (P1200) following by wet sandpaper (P1200) revealed no visible characters, however brought the surface to a mirror finish. Photographs obtained. I applied 'Fry's Reagent' chemical treatment, observing almost immediate results with multiple numbers showing. Photographs obtained using an external flash for oblique lighting. Further Fry's applied which made the developed digits even clearer. As a result of the examination, the following characters were identified. These presented with a high degree of certainty: F - 7 - C - 1 - 0 - A Final photographs obtained, using oblique lighting.
MTQZLP	The serial number was restored to read F7C10A using magnetic particle inspection and chemical etching techniques. The aluminum standard was visually inspected.
MXFNXL	The section of metal bar stock Q1 (Item 1) was visually analyzed and through polishing and chemical processes the obliterated serial number was fully restored to read: F7C10A. This report contains examination results that relate only to the item tested and conclusions based on the interpretations/opinions of this author. Work performed began on 9/5/2024.
MXH86X	Examination of submission 001-1 found that the serial number was obliterated. Physical, magnetic, and chemical processing of submission 001-1 partially restored the serial number to read: *7*10* where the first * represents a character that could be a B, D, E, F, H, K, N, 1 or 4, the second * represents a character that could be a C or O, and the third * represents a character that could be an A, N, or 4.
MXJ4ET	The serial number on the piece of metal (Exhibit 01) was mechanically and chemically treated and restored to read F7C10A. No analysis was performed on the piece of metal (Exhibit 02).
MXXTEY	Recovered characters: F7C10A
MYBAKL	[No Conclusions Reported.]

TABLE 2

WebCode	Conclusions
N6FHDY	The serial number is ground off. The serial number (F7C10A) 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 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.
N9BCBZ	Item 1 - One (1) metal bar stock Examinations Performed: Attempted serial number restoration using magnetic processing was performed on Item 1. Results: The Item 1 obliterated serial number was restored to read "F7C10A". Conclusions: The Item 1 obliterated serial number, located in the midsection, was restored to read "F7C10A".
NDQKYZ	Item 1: The serial number is ground off. The serial number (F7C10A) was restored by acid etching. Polishing, Magnaflux, Fry's reagent and nitric acid were used for the restoration. A chemical reaction was observed when the acid etching solution was applied to the surface area of the steel bar stock. Disposition: Item 1 will be forwarded to the Property Custody Division
NEJKQJ	The restored serial number is F7C10A.
NFBLUL	The metal bar stock (Item 1) was submitted with an obliterated serial number. Using a combination of magnetic and chemical restoration techniques, the obliterated serial number was restored to read: F 7 C 1 0 A.
NFE27M	Attempts to restore the obliterated serial number of Item 1 were successful. The restored serial number is F7C10A.
NJDJ6E	After application of the electromagnetic process (Magnaflux), I have determined the serial number on item 1 as F7C10A.
NMCVZE	After using sand paper, Regula 7505M device was used to restore the obliterated serial number.
NVPXAM	Examination of the steel bar in Item #1 revealed an obliterated area. Standard restoration techniques revealed the following characters: "F7C10A"
NXDDGA	On analysis, I found filing marks on the surface of the steel bar and no number was observed. Upon electrochemical treatment on the filed surface, the number 'F7C10A' was restored. Therefore, I am of the opinion that the obliterated serial number on the steel bar was restored and read as F7C10A.
NXFYDP	The obliterated area was chemically processed for serial number restoration. The restored serial number ia as follows: F7C10A.
NYQT6H	The steel bar, specimen #1, was received in the crime laboratory with an obliterated serial number. Attempts to raise the serial number via chemical methods with Fry's Reagent revealed the serial number to be: F7C10A.
P69H6J	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 F7010A, which corresponds to the size, shape and positioning of the alphanumeric characters engraved on the metallic bar used as the standard.
P6DZ8N	Steel Bar Stock (Item #1) was chemically/magnetically processed. Its serial number was restored to read: F7C10A.
PQRK4N	An obliterated area was observed on the metal bar in Item 1-1. The characters "F7C10A" were restored.
QBBAQL	Item 1 was reportedly a cold-rolled steel piece of metal with a serial number obliterated from the center of the block. Polishing, magnetic, and chemical serial number restoration techniques were applied to the surface. The serial number of F7C10A was restored.
QKG6TQ	I was able to obtain a partial recovery of the Serial number. F1?(possibly C or 6)1?(possibly 6)A
QLUNPG	During the etching process a total of 6 characters appeared: F7C1*A, where the * was an indecipherable character.

TABLE 2

WebCode	Conclusions
QM27ND	Submission 1 contained bar stock with an obliterated serial number, item 1-1, and an aluminum standard, item 1-2. Item 1-1: Bar stock with obliterated serial number The primary serial number, located in the middle of the bar stock, appeared to have been deliberately obliterated through grinding. I used sanding, magnetic particle inspection, and chemical etching techniques to fully restore the following serial number: F 7 C 1 0 A
QNL2QL	1. Examination of Exhibit 1 identified it to be a rectangle shaped metal bar displaying an obliteration in its center. The metal bar is 64.98mm in length, 25.35mm in width, and 6.25mm in thickness. The obliterated area measures 37.92mm in length, 25.35mm in width, and 5.98mm in thickness. The obliteration was processed, and the following characters were observed: F 7 C 1 0 A. All measurements are approximate.
QQP97K	The obliterated serial number on the Item 1 bar stock was restored to read F7C10A.
R23WAH	Examination of the bar stock in Item #1 revealed an obliterated area. Restoration results: F7C10A
R6LWMC	Restored number is "F7010A".
R727L6	The serial number on the bar stock Item 1 has been removed by a milling type machine. An examination showed the serial number to be F7C10A.
R92NBK	[No Conclusions Reported.]
R9L32H	Using standard laboratory restoration techniques, the obliterated serial number on item 001-01 was restored to read "F7C10A". No examination was performed on Item 001-02 aluminum standard.
RCGWYJ	I restored the obliterated serial number (SN) on Item 1 to read F7C10A.
RCLBCK	A piece of steel was received with an apparent obliterated area on one side. Upon restoration, the alpha numeric characters recovered are " F 7 C 1 0 A".
RJ26A2	Physical and chemical processing of Item 1 revealed the characters "F 7 C 1 0 A" within the obliterated area.
RJH7AH	Since our reports are grid based, it would only list: Serial number restoration: F7C10A
RVCKAF	The section of metal bar stock Q1 (Item 001.001) was visually analyzed and through polishing, magnetic and chemical processes was partially restored to read E7?1?A. 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 08/28/2024.
RX3LDH	Serial number restoration: F7C10A
RZNLFJ	The serial number on Item 1 was restored to read F 7 C 1 0 A using magnetic particle inspection.
T2ZLT6	Serial restoration techniques were applied to item 1, a piece of cold rolled steel bar stock. The partially restored serial number was determined to be F7C4*A. the fifth character denoted by * could not be restored.
T6WDYG	Utilizing standard restoration techniques the characters "F7C10A" were recovered on the piece of metal with an obliterated area. No analysis was conducted on the aluminum standard.
T6YV6T	The obliterated serial number on Item 1 was chemically restored and determined to be F7C10A.
TEPGA6	Item 1 was received with an obliterated area. Standard restoration techniques were used to reveal the following characters: F7*1*A where the asterisk is either a C or O. The aluminum plate was used as a reference standard.
TGFHGE	The obliterated serial number on the steel bar stock was chemically processed and fully restored to read : "F7C10A"
TGRHBM	The serial number was restored to read F7C10A.
TJCDR2	the following signs would be restored / recovered in result of examination the testing material: "F 7 6 1 0 A"
TNAWTY	[No Conclusions Reported.]

TABLE 2

WebCode	Conclusions
TWMNLH	Examination and chemical processing of the obliterated serial number located on the piece of aluminum was partially restored and determined to be "F7?10A". The question mark represents a partially restored digit which may be a "C" or a "6".
TXHA9H	Using chemical etching techniques the serial number was restored to read F 7 C 1 0 A.
TZMUZN	The serial number on the center of Item 1 was determined to be "F7C10A".
U4Z83M	The following characters were recovered: F7C10A
UACV3J	The serial number on the item 1 steel block was fully restored to be F 7 C 1 0 A. The item 1A standard block was used as a reference during testing.
UEJJFL	The obliterated serial number has been restored and can be read as: F7C10A
UL9BEM	1. Exhibit 1 consists of one ferromagnetic metal bar with an obliterated area. It could not be determined what type of tool caused the damage on the obliterated area of Exhibit 1. The damaged area is not suitable for comparison. 2. The obliterated area of Exhibit 1 was restored and the following characters were observed: F 7 C 1 0 A.
UXTNVH	Item 1 was sanded and polished. Acid was applied to the area of the obliterated serial number. The serial number was recovered and found to be F7C10A.
UZ3QPT	Collaborative Testing Services- Forensic Testing Program Test No. 24-5251: Serial Number Restoration Participant Code: [Code] Webcode: [Code]. [Name]. Notes: Date Worked: 08/27/2024. The serial number is milled off. The serial number (F7C10A) was restored by polishing, acid etching and magnetic particle inspection. A majority of the serial number was restored using magnetic particle inspection. Acid etching was attempted using Fry's reagent but did not yield any better results. This item will be stored in the Firearm Section's Evidence Room.
V8DGKJ	I first visually inspected the piece of steel with negative results for a serial number. I then polished the steel with a steel wool to smooth out the surface. I put the piece of steel onto a magnet. I then put a few drops of Magnetic Particle Inspection (MPI) solution on the surface of the steel and got a few numbers. I then wiped off the solution and polished the surface again and put a few drops of the (MPI) on the steel and I got the numbers and letters of F7C10A. Photographs of the results were taken to preserve the results.
VHFFUE	The section of metal bar stock Q1 (Item 1) was visually analyzed and through polishing, magnetic and chemical processes was fully restored to read F7C10A. 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 August 15, 2024.
VLZEVF	MISCELLANEOUS: Item 1: The serial number was restored to read F 7 C 1 0 A using magnetic particle inspection.
VWMJ2U	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: F7C10A.
VZVQGD	The obliterated serial number on the metal bar was polished and chemically restored to reveal a partial serial number of F7?1?A.
WBQJ39	The Obliterated serial number-Item1 was partial restored The restored characters are: F 7 _ 1 _ A The third character is partially restored it can be O or C. The fifth character has not been restored
WDHFF8	The obliterated serial number was fully restored to read "F7C10A".
WFLBA7	After using sand paper, Regula 7505M device was used to restore the obliterated serial number.
WNGBQJ	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 F7C10A.
WQPEMF	The characters "F7C10A" were restored on the bar stock in Item #1.



TABLE 2

WebCode	Conclusions
WYZJXL	Item 1 was chemically processed and the following partial serial number was restored: F7_1_A. The third character appeared most consistent with a "C"; however, "0" and "6" could not be ruled out definitively. All attempts to restore the fifth character were unsuccessful.
WZ9XYZ	The serial number of piece of cold steel bar stock, described in item 1, was restored a correspond to: F7C10A. [Initials] August 08/27/2024
XBD3VM	The characters on the Item 1 steel metal were successfully restored to read F7C10A.
XE87FE	Examination of Item 1 reveled an obliterated area on the steel bar stock. Standard restoration techniques revealed the following characters "F7C10A".
XE9U2X	The serial number was restored to read F7C10A.
XNXHYL	An attempt was made to chemically restore the serial number; however, no serial number was observed. During the restoration process, a layer of metal came off from the steel bar stock.
XRUBNB	After application of acid solution we were able to reveal the following caracters : ?7?10? We aren t able to read all caracters.
YABREA	Lab Item(s)#: 1. Restoration Results: F7C10A
YGRANB	Restoration Results: F7C10A
YJFYUA	Items – Description/Visual Examination. Item 1: A piece of steel bar stock with suspected obliterated serial number. Examination Results: Item 1 – steel bar stock. Using chemical serial number restoration techniques, an attempt was made to restore the obliterated serial number with the following results: Serial Number: F 7 C 1 0 A was restored on Item 1.
YJJ93A	The hypothesis that the serial number is F 7 0 1 0 A is supported
YNANMB	The piece of cold rolled steel bar stock's (Item #1) obliterated serial number located on the front of the plate was chemically processed and restored to read "F7C10A"
Z7NJHU	The examination and processing of the obliterated serial number on the Item 1 piece of bar stock was restored to read "F7C10A".
ZAAE6M	Serial number restoration results for Lab Item #1 are F7C10A
ZGNA2G	Examination and magnetic and chemical processing of [Laboratory] Item 001 restored the original obliterated serial number which was determined to be F7C10A. The requesting agency will be responsible for entering the serial number into the National Crime Information Center (NCIC) Stolen Gun Files.
ZHN46F	A serial number restoration was performed on this item. Based upon the CTS paperwork, the expected serial number configuration is six characters. The serial number was fully restored and appeared to be F7C10A.
ZHNZFC	Chemical restoration techniques were applied to item #1. The original serial number was partially restored as F7*10A, where the asterisk represents either a "C" or a "0".
ZLME2F	The item was physically and chemically processed to recover the obliterated serial number. The recovered serial number was F7C10A. The aluminum standard was used as a reference to compare to the restored characters on the obliterated item.
ZMFBPA	The serial number on the piece of cold rolled steel bar stock, item 1, was restored to read "F7C10A".
ZYFBPF	1) Examination of Exhibit 1 revealed one ferromagnetic metal bar measuring 64.72mm long, 25.32mm wide, and 6.19mm thick. 2) The center portion of one side of Exhibit 1 contains a surface obliterated by an abrasive grinding type tool. This toolmark is unsuitable for microscopic comparison. 3) The obliterated surface of Exhibit 1 was restored and the following six characters were observed: F 7 C 1 0 A.

# Sample Preparation

(listed in order of use)

TABLE 3

WebCode	<u>Method</u>	<u>Tool Used</u>	<u>Grit Size</u>
236X98	None		
28JD2K	Polishing	Dremel	
2PGVQE	Polishing	Dremel	
2X9BFJ	Polishing	Emery paper	
3267UC	Polishing	Dremel	
	Visual	Stereoscope	
38UN73	Visual		
	Polishing	Dremel	
3HV3CU	Polishing	Sand paper	1200
3KGXT8	Visual	Stereoscope	
3KM72V	None		
3KX8G3	Sanding	Sand paper	120
3LW3EC	Polishing	Dremel	
3Q6QQT	Grinding	Rubber Wheel	
	Polishing	Autosol metal polish	
3TUVM7	Visual	Stereoscope	
4M36F2	Polishing	Dremel	
4RXYCH	Polishing	Steel wool	
68CWHB	None		
693THG	Visual		
6BLUD4	None	Visual	
6CH27G	None		
6E7GE4	None		No preparation done, smooth clean surface as received
6FXVKT	Visual	Stereoscope	

TABLE 3

Sample Preparation			
WebCode	Method	Tool Used	Grit Size
6LJPF6	Polishing	Steel wool	
	Cleaning	Ethanol	
6QB2B2	None		
6QH3JH	None		
6RRY32	None	Visual	
6VXA8H	Visual	Stereoscope	
6XGB34	Polishing	Steel wool	
6ZPLZT	Polishing	Dremel	
77MVKQ	Visual	Magnifying glass	
	Visual	Microscope	
	Polishing	Sand paper	Grit Size: 500, 220
79VTA2	Visual	Stereoscope	
	Sanding	Sand paper	1000 grit
	Cleaning	Acetone	
7FX7Q	Visual	Microscope	
	Visual	Magnifying Glass	
	Cleaning	Acetone	
	Sanding	Sand paper	#220 y #100
	Polishing	Sand paper	#500,
7JTQ28	Cleaning	Acetone	
7NR3W8	Polishing	Steel wool	
7P4R7B	Visual	Stereoscope	
	Polishing	Dremel	
	Sanding		220
7UD9FY	None		
7VQHT7	None		
7WKHJP	Cleaning	Acetone	
82DRFA	Sanding	Dremel	180
836N64	None		

TABLE 3

Sample Preparation			
WebCode	Method	Tool Used	Grit Size
8PCD8W	Polishing	Dremel	
8U93N4	Sanding	Sand paper	220, 400, 600
8WZ223	Visual	Stereoscope	
	Sanding	Sand paper	80
8XTZ48	Cleaning		
	Polishing	Dremel	
94BTWV	Visual		
94TTM2	Visual	eyes	
9724J6	Visual	Stereoscope	
	Polishing	Dremel	
972UYZ	None		
9A233A	Sanding	Sand paper	
9AV3UT	Sanding	Sand paper	p180+p320
9AYKWY	None		
9M8Z6P	Visual	Stereoscope	
9MBCJZ	Cleaning	Acetone	
9NGDK6	Sanding	Sand paper	1500
	Polishing	Cloth	Flitz
9V24FD	Visual	Stereoscope	
A3EL2J	Visual	Table magnifying lamp	
	Cleaning	Papel Towel	
	Sanding	Sand paper	320
A3WVRY	Visual	Stereoscope	
A8M63X	Visual	Stereoscope	
	Polishing	Rotary Tool	
A9NX3Q	Visual	Stereoscope	
AFKRZP	None		
AH6NF3	Sanding	Sand paper	200

TABLE 3

Sample Preparation			
<u>WebCode</u>	<u>Method</u>	<u>Tool Used</u>	<u>Grit Size</u>
AHBU8X	None		
ALPBG3	None		
AQ6WAA	None		
AU684N	Visual	Microscope	
AWQ4J2	None		
AWVABX	None		
AX6JYN	Sanding	Microscope	200
AYEB7J	Visual	Table magnifying lamp	
	Cleaning	Papel Towel	
	Sanding	Sand paper	320
B3PX3L	None		
B48WEX	None		
B4AHAE	Visual	Stereoscope	
	Polishing	Dremel	
BH69KG	Cleaning	Acetone	1200
	Sanding	Dremel	1200
BYENCC	Visual	Stereoscope	
C2A4WK	None		
C7A66U	Visual		
	Polishing	Dremel	
C83XZD	None		
C9U7YF	Polishing	Dremel	
CKP6WE	Cleaning	Rotary Tool	
CWKG87	Visual		
CXCDWZ	None		
CY7DMJ	Visual	Acetone	
D6AEPY	Polishing	Dremel	

TABLE 3

<b>Sample Preparation</b>				
<b>WebCode</b>	<b>Method</b>	<b>Tool Used</b>	<b>Grit Size</b>	
DBHQNK	Sanding	Sand paper	400	
	Sanding	Sand paper	600	
	Sanding	Sand paper	800	
	Cleaning	Acetone		
DEXFRU	Visual	Stereoscope		
	Polishing	Dremel	120	
DF969L	Visual	Stereoscope		
	Cleaning	Acetone		
DFCP62	Polishing	Emery paper	Emory/Fine	
DJXAB	None			
DNDBJ4	Sanding	Sand paper	400	
DTF9F2	None			
DWDGYP	Polishing	Dremel		
DXVF4Z	Visual	Stereoscope		
E4D9T6	Polishing	Rotary Tool		
EC8ENR	Polishing	Dremel		
ECLZXT	None			
EDXPDY	None			
EECBM2	Sanding	Sand paper		
	Polishing			
EERFJD	None			
EG2H8X	Visual	Stereoscope		
	Sanding	Sand paper	1200	
EHTJBZ	Visual	Eyes		
EWN3KW	Sanding	Dremel	220	
EWT9DT	Visual			
	Polishing	Dremel		
EY2KR9	Polishing	Sand paper	Fine	

TABLE 3

Sample Preparation			
WebCode	Method	Tool Used	Grit Size
F7EWKZ	Visual	Stereoscope	
F97RAU	Polishing	Sand paper	400 grit
FBAT7K	Visual	Microscope	No sanding.
FDXYR3	Visual	Microscope	
FPQLXX	Cleaning	Acetone	
FYYZWT	Polishing	Sand paper	600 – 800 – 1200 – 2/0 – 4/0
G7TRHR	None		
G9FBJP	Sanding	Sand paper	120
G9LBR7	Polishing	Dremel	
GH6YFD	Visual	Stereoscope	
GPLLB3	Polishing	Dremel	
	Sanding	Sand paper	Fine
GTMQQ9	Visual	Stereoscope	
	Polishing	Dremel	
	Visual	Stereoscope	
H2WDGN	Visual	Stereoscope	
HB2EQM	Visual	Magnifying glass	
HBJC8T	Polishing	Dremel	
	Cleaning	Dremel	
HDN2A3	Visual	MagnaFlux	
HF934N	None		
HFF3D6	Visual	Stereoscope	
HLGCJX	Visual	Stereoscope	
HN7Q3F	Visual	Magnifying Glass	
	Polishing	Sand paper	Grit size #220 and #500
HN9BXV	Visual		
HQZACU	Visual		

TABLE 3

<b>Sample Preparation</b>			
<b>WebCode</b>	<b>Method</b>	<b>Tool Used</b>	<b>Grit Size</b>
HV7RKV	Visual	Stereoscope	
	Sanding	Dremel	120
J668LJ	Visual	Microscope	
	Polishing	Sand paper	60, 600
	Polishing	Dremel	
J6D3FR	Cleaning	Acetone	
J744JU	Visual	Stereoscope	
J9ALHP	None		
J9AV3U	None		
JE2WRN	Polishing	Dremel	
K2PYXK	Visual	Acetone	
KFPRR2	Visual		
KH9TLN	Sanding	Dremel	800
KHUCGM	None		
KREXCJ	None		
KX7ZJP	None		
L3WPLE	Visual	Stereoscope	
	Polishing	Dremel	
L46WQT	Polishing	Dremel	
LENBRA	Visual	Microscope	3M Ultra Fine Wetdry Sanding Paper
LM3ACM	None	Visual	
LT9UPJ	Visual	Microscope	
LZPG9N	Sanding	Sand paper	
MABQKN	None		
MB944A	Sanding	Sand paper	400, 800, 1200
	Polishing	Rotary Tool	
MCZ7TB	None		



TABLE 3

Sample Preparation			
<u>WebCode</u>	<u>Method</u>	<u>Tool Used</u>	<u>Grit Size</u>
MH48QJ	Polishing	Dremel	
MKCF3P	Visual	Stereoscope	
MNBRXP	Visual	Stereoscope	
MRQ98U	Grinding	Dremel	CRATEX Coarse (C)
	Polishing	Dremel	CRATEX Extra Fine (XF)
	Polishing	Dremel	Felt wheel, buffing compound (Jewelers Red Rouge)
MTNC6B	Sanding	Sand paper	P1200 dry and wet
MTQZLP	Visual	Stereoscope	
	Sanding	Sand paper	1200
MXFNXL	None		
MXH86X	Polishing	Dremel	
MXJ4ET	Polishing	Dremel	
MXYTEY	None		
MYBAKL	Sanding	Dremel	800
N6FHDY	Visual		
	Sanding	Sand paper	Unknown
	Polishing	Rotary Tool	
N9BCBZ	None		
NDQKYZ	Sanding	Sand paper	Fine
	Polishing	Rotary Tool	
NEJKQJ	Polishing	Sand paper	80-120
NFBLUL	None		
NFE27M	None		
NJDJ6E	Sanding	Sand paper	180, 120
	Polishing	Dremel	
NMCVZE	Sanding	Sand paper	P600
NVPXAM	Visual	Stereoscope	

TABLE 3

Sample Preparation			
WebCode	Method	Tool Used	Grit Size
NXDDGA	Cleaning	Acetone	
NXFYDP	None		
NYQT6H	Sanding	Sand paper	120 grit
P69H6J	Polishing	Dremel	
P6DZ8N	Visual	Stereoscope	
PQRK4N	None		
QBBAQL	Polishing	Sand paper	1000 and 2000 grit
QKG6TQ	Visual		
	Grinding	Dremel	
	Sanding	Sand paper	varying grades
QLUNPG	Visual		
	Cleaning	Steel wool	
QM27ND	Sanding	Sand paper	
QNL2QL	Sanding	Sand paper	400
QQP97K	Visual		
R23WAH	Visual	Naked eye	
R6LWMC	Cleaning	Acetone	
R727L6	Polishing	Emery paper	Fine
	Polishing	Rotary Tool	
	Visual	Stereoscope	
R92NBK	Cleaning	Acetone	
R9L32H	None	Stereoscope	
	Sanding	Sand paper	220 and 180
RCGWYJ	Sanding	Sand paper	100 and 400
RCLBCK	None		
RJ26A2	Sanding	Sand paper	800
	Polishing	Dremel	jewelers rouge
RJH7AH	Polishing	Dremel	unknown

TABLE 3

Sample Preparation			
WebCode	Method	Tool Used	Grit Size
RVCKAF	Polishing	Dremel	
RX3LDH	None	observation	
RZNLFJ	Visual	Stereoscope	
	Polishing	Sand paper	1200
	Sanding	Sand paper	220
T2ZLT6	Visual	Stereoscope	
	Sanding	Sand paper	P400
	Cleaning	Acetone	
	Visual	Stereoscope	
	Polishing	Sand paper	P1500
	Cleaning	Acetone	
	Visual	Stereoscope	
T6WDYG	None		
T6YV6T	None		
TEPGA6	Visual	Stereoscope	
	Polishing	Dremel	polishing using dremel
TGFHGE	Sanding	Sand paper	320
TGRHBM	Polishing	Dremel	
	Polishing	Dremel	
TJCDR2	Visual	Stereoscope	
TNAWTY	Sanding	Sand paper	1200
	Polishing	Dremel	
TWMNLH	Polishing	Dremel	
	Sanding	Sand paper	microgrit paper
TXHA9H	Visual	Stereoscope	
	Sanding	Sand paper	P320
	Polishing	Sand paper	P1000
TZMUZN	None		
U4Z83M	Polishing	Dremel	
UACV3J	None		

TABLE 3

Sample Preparation			
<u>WebCode</u>	<u>Method</u>	<u>Tool Used</u>	<u>Grit Size</u>
UEJJFL	Polishing Visual	Polishing wheel pad Stereoscope	
UL9BEM	None		
UXTNVH	Polishing	Steel wool	Steel wool
UZ3QPT	Polishing	Sand paper	Fine
V8DGKJ	Visual Polishing	Steel wool	
VHFFUE	None		
VLZEVF	Visual	Stereoscope	
VVMJ2U	Visual	Stereoscope	
VZVQGD	Polishing	Sand paper	Fine
WBQJ39	Sanding	Sand paper	extra fine 320-500
WDHFF8	None		
WFLBA7	Sanding	Sand paper	P1000,P600,P400,P320
WNGBQJ	Visual Polishing	Stereoscope Dremel	425 wheel
WQPEMF	Visual	Stereoscope	
WYZJXL	Polishing	Dremel	Fine (blue wheel)
WZ9XYZ	Cleaning	Microscope	
XBD3VM	Visual	Stereoscope	
XE87FE	None		
XE9U2X	Sanding Sanding Polishing	Sand paper Emery paper Metal Polish cream - Autosol	800 Ultrafine
XNXHYL	Visual	Stereoscope	
XRUBNB	Sanding	Sand paper	320
YABREA	Polishing	Rotary Tool	

TABLE 3

<b>Sample Preparation</b>			
<b>WebCode</b>	<b>Method</b>	<b>Tool Used</b>	<b>Grit Size</b>
YGRANB	Polishing	Dremel	
YJFYUA	Visual	Stereoscope	
YJJ93A	Sanding	Sand paper	
YNANMB	Visual	Visual	
Z7NJHU	None		
ZAAE6M	Polishing	Dremel	
ZGNA2G	None		
ZHN46F	Polishing	Dremel	
ZHNZFC	Polishing	Dremel	
ZLME2F	Visual		
	Polishing	Rotary Tool	Rubber Tip
ZMFBPA	None		
ZYFBPF	Cleaning	Dry Kimwipe	
	Sanding	Sand paper	400

<b>Response Summary</b>	<b>Participants: 237</b>
<b>Sample Preparation</b>	
<b>Visual Method:</b>	<b>82</b>
<b>Sanding Method:</b>	<b>52</b>
<b>Polishing Method:</b>	<b>82</b>
<b>None:</b>	<b>61</b>
<p>Note: Participants may use more than one sample preparation method therefore the total number of preparation methods reported may not be equivalent to the total number of participants.</p>	

# Recovery Methods

(listed in order of use)

TABLE 4

Recovery Methods		
WebCode	Method	Time
236X98	MagnaFlux	
	Fry's Reagent	~5 minutes
	20% Nitric Acid	~2 minutes
28JD2K	MagnaFlux	
	Fry's Reagent	~5 minutes
2PGVQE	Fry's Reagent	6 hours
	25% nitric acid	5 minutes
2X9BFJ	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	10 - 15 Minutes
3267UC	MagnaFlux	
	Acidic Ferric Chloride	1 min
	Fry's Reagent	1 min
	Nitric Acid	1 min
38UN73	DAVIS REAGENT	15 TO 30 SECONDS PER APPLICATION
	Turner's Reagent	15 TO 30 SECONDS PER APPLICATION
	Fry's Reagent	15 TO 30 SECONDS PER APPLICATION
3HV3CU	Fry's Reagent	approx. 45 minutes
3KGXT8	Magnetic Particle Inspection (MPI)	
3KM72V	Magnetic Particle Inspection (MPI)	
3KX8G3	Fry's Reagent	1 minute
3LW3EC	MagnaFlux	One minute
	Davis	One minute
	Turner's Reagent	One minute
	Fry's Reagent	One minute
	MagnaFlux	One minute
	Davis	One minute
	MagnaFlux	One minute
3Q6QQT	Fry's Reagent	8 minutes immediately visible under oblique lighting improved to easily read.
3TUV7M	MagnaFlux	
	Fry's Reagent	few minutes
4M36F2	25% Nitric Acid	chemical reagent was continually swiped across the surface of the bar stock with a swab
	Turner's Reagent	chemical reagent was continually swiped across the surface of the bar stock with a swab
	Fry's Reagent	chemical reagent was continually swiped across the surface of the bar stock with a swab

TABLE 4

Recovery Methods		
WebCode	Method	Time
4RXYCH	25% Nitric Acid	5 minutes
	Davis' Reagent	10 minutes
	Turner's Reagent	15 minutes
	Fry's Reagent	15 minutes
68CWHB	MagnaFlux	
	Davis Reagent	5 min
	Turner's Reagent	5 min
	Fry's Reagent	8 min
693THG	MagnaFlux	
	Fry's Reagent	
	20% Nitric Acid	
6BLUD4	Davis' Reagent	Approximately 2 minutes (repeated)
	Turner's Reagent	Approximately 2 minutes (repeated)
	Fry's Reagent	Approximately 2 minutes (repeated)
6CH27G	MagnaFlux	
6E7GE4	Magnaflux (Red)	Variable times, did not exceed 5 minutes
	Davis	Variable times, did not exceed 5 minutes
	Turner's Reagent	Variable times, did not exceed 5 minutes
	Fry's Reagent	Variable times, did not exceed 5 minutes
	25% Nitric Acid	Variable times, did not exceed 5 minutes
6FXVKT	Magnetic Particle Inspection (MPI)	
	Acid Etch Method	~ 10 minutes
6LJPF6	MagnaFlux	
	Fry's Reagent	10 minutes
6QB2B2	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	10 seconds
6QH3JH	MagnaFlux	
6RRY32	Davis Reagent	~ 2 minutes (repeated)
	Turner's Reagent	~ 2 minutes (repeated)
	Fry's Reagent	~ 2 minutes (repeated)
6VXA8H	Magnetic Particle Inspection (MPI)	
	Davis Reagent	Swiping
	Fry's Reagent	Swiping
6XGB34	Fry's Reagent	restoration completed over 5h period
6ZPLZT	Fry's Reagent	5 minutes
77MVKQ	Davis's Reagent	10 mins
	Turner's Reagent	15 mins
	Fry's Reagent	40 mins

TABLE 4

Recovery Methods		
WebCode	Method	Time
79VTA2	Fry's Reagent	
7FXX7Q	Davi's Reagent	8 minutes
	Turner's Reagent	16 minutes
	Fry's Reagent	56 minutes
7JTQ28	Magnetic Particle Inspection (MPI)	
	25% Nitric Acid	15 minutes
	Davis' Reagent	15 minutes
	Turner's Reagent	30 minutes
	Fry's Reagent	30 minutes
7NR3W8	MagnaFlux	with Magnaflux / N/A
	Fry's Reagent	30 seconds (repeatedly)
	Turner's Reagent	30 seconds (repeatedly)
	Davis Reagent	30 seconds (repeatedly)
	25% Nitric	30 seconds (repeatedly)
7P4R7B	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	~5 Seconds per swipe
	Turner's Reagent	~5 Seconds per swipe (alternating)
7UD9FY	Turner's Reagent	60 min
	Fry's Reagent	40 min
	Fry's Reagent	20 min
	Turner's Reagent	30 min
7VQHT7	MagnaFlux	
	Fry's Reagent	swab application, 25 seconds +/-
	25% Nitric Acid	swab application, 15 seconds +/-
7WKHJP	Fry's Reagent	It was apply, removed and reapply for approximately 5 minutes.
	MagnaFlux	
82DRFA	MagnaFlux	
	Fry's Reagent	
836N64	Fry's Reagent	pooled for short period of time
8PCD8W	MagnaFlux	
	Polish	
	MagnaFlux	
	Polish	
	Davis Reagent	5 min
	Turner's Reagent	5 min
	Fry's Reagent	5 min
8U93N4	Fry's Reagent	~4-5 minutes total time
	MagnaFlux	



TABLE 4

Recovery Methods		
WebCode	Method	Time
8WZ223	Magnetic Particle Inspection (MPI)	
8XTZ48	MagnaFlux	
	Davis Reagent	1 min
	Turner's Reagent	1 min
	Fry's Reagent	1 min
94BTVW	Fry's Reagent	approximately 10-15 minutes
	Nitric Acid	approximately 1-2 minutes
94TTM2	Fry's Reagent	ten (10) minutes
9724J6	MagnaFlux	
	Acid Etch Method	Nitric Acid - minutes
	Acidic Ferric Chloride	minutes
	Fry's Reagent	minutes
972UYZ	MagnaFlux	used u-shaped magnet
	Acidic Ferric Chloride	swiped with cotton swabs
	20% Nitric Acid	swiped with cotton swabs
	Fry's Reagent	swiped with cotton swabs
9A233A	Fry's Reagent	1-2 minutes
9AV3UT	REGULA 7505M device	
9AYKWY	Magnetic Particle Inspection (MPI)	
	Acid Etch Method	Davis- 15 minutes
9M8Z6P	MagnaFlux	
9MBCZ	Fry's Reagent	Swabbed for 30 minutes
	25% Nitric Acid	Swabbed for 10 minutes
	Fry's Reagent	Swabbed for 20 minutes, pooled for 15 minutes, swabbed for 15 more minutes
9NGDK6	MagnaFlux	
	Acid Etch Method	90 minutes
9V24FD	MagnaFlux	
	Fry's Reagent	2 hours
	Acidic Ferric Chloride	5 minutes
A3EL2J	Acid	Slow swap in one direction with concentrated nitric acid in 2 minutes
	Fry's Reagent	Slow swabbing in one direction with Fry reagent in 5 minutes
A3WVRY	MagnaFlux	
	Acidic Ferric Chloride	30-90 seconds, swabbed
	Nitric acid	30-90 seconds, swabbed
	Fry's Reagent	30-90 seconds, swabbed
	Stabilized with oil	

TABLE 4

Recovery Methods		
WebCode	Method	Time
A8M63X	Davis Turner's Reagent Fry's Reagent Ferric Chloride	
A9NX3Q	Fry's Reagent	15 mins
AFKRZP	Fry's Reagent	~1 minute
AH6NF3	Fry's Reagent Turner's Reagent	
AHBU8X	Magnetic Particle Inspection (MPI) Fry's Reagent Griffin Reagent Davis' Reagent	Several minutes Repeated applications for 1/2 hour Used as a highlighter
ALPBG3	MagnaFlux Fry's Reagent Acid Etch Method MagnaFlux	5 minutes 3 minutes
AQ6WAA	MagnaFlux Davis' Reagent Turner's Reagent MagnaFlux Nitric Acid Turner's Reagent MagnaFlux Turner's Reagent	~30 seconds ~30 seconds ~30 seconds ~30 seconds, alternating with Nitric Acid ~30 seconds, alternating with Nitric Acid
AU684N	Magnetic Particle Inspection (MPI)	
AWQ4J2	Fry's Reagent	restoration completed over 3h period
AWVABX	Magnetic Particle Inspection (MPI)	
AX6JYN	Fry's Reagent MagnaFlux	total 10 min
AYEB7J	Acid Fry's Reagent	Slow swap in one direction with concentrated nitric acid in 2 minutes Slow swabbing in one direction with Fry reagent in 5 minutes
B3PX3L	Fry's Reagent	30 minutes
B48WEX	Fry's Reagent Iron #2 reagent 25% Nitric Acid	~15 min ~10 min ~1 min

TABLE 4

Recovery Methods		
WebCode	Method	Time
B4AHAE	MagnaFlux Davis Turner's Reagent Fry's Reagent 25% Nitric Acid	
BH69KG	Electro-magnetic Fry's Reagent Acidic Ferric Chloride	4 minutes 30 seconds 30 seconds
BYENCC	MagnaFlux Fry's Reagent Acid Etch Method	 swipe with cotton for a minute swipe with cotton for a minute
C2A4WK	Acidic Ferric Chloride 25% Nitric acid	5 minutes 15 minutes
C7A66U	Magnetic Particle Inspection (MPI) Davis Reagent Turner's Reagent Fry's Reagent	 seconds to minutes seconds to minutes seconds to minutes
C83XZD	Davis Turner's Reagent Fry's Reagent 25% Nitric Acid Fry's Reagent	less than 1 minute per application less than 1 minute per application less than 1 minute per application less than 1 minute per application less than 1 minute per application
C9U7YF	MagnaFlux	
CKP6WE	Fry's Reagent	5 minutes
CWKG87	Fry's Reagent Nitric Acid (25%)	10-20 seconds at a time 10-20 seconds at a time
CXCDWZ	MagnaFlux Fry's Reagent 25% Nitric Acid	 10-20 seconds per swab 10-20 seconds per swab
CY7DMJ	Fry's Reagent	
D6AEPY	MagnaFlux Fry's Reagent 20% Nitric Acid	5 minutes 60 minutes 20 minutes
DBHQNK	Fry's Reagent	30min process
DEXFRU	Magnetic Particle Inspection (MPI) Fry's Reagent	

TABLE 4

Recovery Methods		
WebCode	Method	Time
DF969L	Davis Reagent	20 min.
	Turner's Reagent	15 min.
	Fry's Reagent	20 min
DFCP62	Fry's Reagent	Less than 2 minutes
	Nitric Acid	Less than 2 minutes
DJCXAB	MagnaFlux	
	Davis'	30 min
	Turner's Reagent	15 min
	Fry's Reagent	30 min
	25% Nitric Acid	5 min
	Fry's Reagent	30 min
DNDBJ4	Phosphoric Nitric Acid	45 sec
	Davis	45 sec
	Turner's Reagent	45 sec
DTF9F2	MagnaFlux	
DWDGYP	Acid Etch Method	few minutes
DXVF4Z	MagnaFlux	
	Fry's Reagent	8 minutes
E4D9T6	MagnaFlux	
	Davis	5-7 mins
	Turner's Reagent	7-10mins
	Fry's Reagent	20 mins
EC8ENR	MagnaFlux	
ECLZXT	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	Approx. 3 minutes
	25% Nitric Acid	Approx. 2 minutes
EDXPDY	MagnaFlux	
	Fry's Reagent	total time = approximately 5 minutes
	20% nitric acid	total time approximately 30 seconds
EECBM2	Acid Etch Method	several seconds each time
EERFJD	MagnaFlux	
	Acid Etch Method	Davis Reagent; total of ~10 minutes wiping the surface with a cotton swab
	Turner's Reagent	Total of ~10 minutes wiping the surface with a cotton swab
	Fry's Reagent	Total of ~10 minutes wiping the surface with a cotton swab

TABLE 4

Recovery Methods		
WebCode	Method	Time
EG2H8X	Magnetic Particle Inspection (MPI)	
	25% Nitric Acid	Approximately 2 minutes total over several shorter periods
	Davis' Reagent	Approximately 2 minutes total over several shorter periods
	Turner's Reagent	Approximately 1 minute total over several shorter periods
	Fry's Reagent	Approximately 45 Seconds total over several shorter periods
EHTJBZ	MagnaFlux	
EWN3KW	Fry's Reagent	restoration completed over 2h period
EWT9DT	MagnaFlux	
	Fry's Reagent	
	Acid Etch Method	2 minutes
	Fry's Reagent	
EY2KR9	MagnaFlux	
	Fry's Reagent	15
	MagnaFlux	
F7EWKZ	Magnetic Particle Inspection (MPI)	
	Turner's Reagent	15
	Fry's Reagent	15
F97RAU	Magnetic Particle Inspection (MPI)	
FBAT7K	Fry's Reagent	about 15 minutes
FDXYR3	Magnetic Particle Inspection (MPI)	
	MagnaFlux	
FPQLXX	MagnaFlux	
	Fry's Reagent	
	25% Nitric Acid	
FYYZWT	Fry's Reagent	
	Mipro Acier	
	Wasau	
	Nitric acid	
G7TRHR	MagnaFlux	
	Davis' Reagent	5 minutes
	Turner's Reagent	3 minutes
	Fry's Reagent	1 minute
	25% Nitric Acid	30 seconds
G9FBJP	Fry's Reagent	five minutes

TABLE 4

Recovery Methods		
WebCode	Method	Time
G9LBR7	Fry's Reagent MagnaFlux 20% Nitric Acid	
GH6YFD	MagnaFlux	
GPLLB3	MagnaFlux Fry's Reagent	5 min 8 min
GTMQQ9	Fry's Reagent  Acidic Ferric Chloride Ferric Chloride  Nitric Acid	Multiple applications with varying time periods due to specific characters not developing Only one application. Chose others Multiple applications with varying time periods due to specific characters not developing Multiple applications with varying time periods due to specific characters not developing
H2WDGN	MagnaFlux Davis's Reagent Turner's Reagent Fry's Reagent	>2 minutes >2 minutes >2 minutes
HB2EQM	Acid Etch Method  Davis Reagent  Turner's Reagent  Fry's Reagent  Magnetic Particle Inspection (MPI)	Applied by saturated swab, swabbed for one minute  Applied by saturated swab, swabbed for one minute  Applied by saturated swab, swabbed for one minute  Applied by saturated swab, swabbed for one minute
HBJC8T	Magnetic Particle Inspection (MPI)	
HDN2A3	Sanding Fry's Reagent	NR2 2 minutes
HF934N	Magnetic Particle Inspection (MPI) Turner's Reagent Fry's Reagent Magnetic Particle Inspection (MPI)	Surface wiped with saturated cotton swab Surface wiped with saturated cotton swab
HFF3D6	MagnaFlux Fry's Reagent Acid Etch Method	3-5 min 20% Nitric Acid was used for contrast
HLGCJX	MagnaFlux Magnetic Particle Inspection (MPI)	

TABLE 4

Recovery Methods		
WebCode	Method	Time
HN7Q3F	Acid Etch Method	240 minutes
	Davis Reagent	45 minutes
	Turner's Reagent	100 minutes
	Fry's Reagent	90 minutes
	Sodium bicarbonate	5 minutes
HN9BXV	MagnaFlux	
	Fry's Reagent	20 minutes
HQZACU	MagnaFlux	
	Fry's Reagent	~2 hours
	Acid Etch Method	~2 hours
HV7RKV	Davis	1-2 minutes
	Turner's Reagent	used as a highlighter
	Fry's Reagent	1-2 mins
J668LJ	MagnaFlux	
	Fry's Reagent	
J6D3FR	Fry's Reagent	50 minutes of rubbing/wiping
	Polish	1 Minute to clean
J744JU	MagnaFlux	
	Fry's Reagent	10 minutes
	25% Nitric Acid	10 minutes
J9ALHP	MagnaFlux	
	Acidic Ferric Chloride	10 - 15 seconds at a time
	20% Nitric Acid	10-15 seconds at a time
J9AV3U	MagnaFlux	
	Acidic Ferric Chloride	5 minutes
	Fry's Reagent	5 minutes
	20% Nitric Acid	5 minutes
JE2WRN	Fry's Reagent	Swabbing for ~ 30min total
	Acidic Ferric Chloride	Swabbing for ~ 20min total
	MagnaFlux	
K2PYXK	Fry's Reagent	
	Acidic Ferric Chloride	
KFPRR2	Turner's Reagent	15 minutes
	Fry's Reagent	10 minutes
	Turner's Reagent	10 minutes
	Fry's Reagent	20 minutes
	Fry's Reagent	15 minutes
	Turner's Reagent	5 minutes
	Fry's Reagent	20 minutes

TABLE 4

Recovery Methods		
WebCode	Method	Time
KH9TLN	Magnetic Particle Inspection (MPI)	
	Acid Etch Method	5 sec
	Turner's Reagent	5 sec
	Fry's Reagent	5 sec
KHUCGM	Fry's Reagent	15 minutes
KREXCJ	Electro-magnetic	
KX7ZJP	MagnaFlux	
	Fry's Reagent	~30
	20% Nitric Acid	~30
L3WPLE	MagnaFlux	
	Fry's Reagent	10-15 seconds per swab, followed by rinsing and examination under the stereoscope between swabbing
L46WQT	MagnaFlux	
	Davis' Reagent	
	Turner's Reagent	
	Fry's Reagent	
LENBRA	Fry's Reagent	35 minutes in total
LM3ACM	Davis Reagent	~2min (repeated)
	Turner Reagent	~2min (repeated)
	Fry's Reagent	~2min (repeated)
LT9UPJ	Fry's Reagent	10-15 minutes
LZPG9N	MagnaFlux	
MABQKN	MagnaFlux	
	Acidic Ferric Chloride	
	Nitric Acid	
MB944A	Fry's Reagent	
MCZ7TB	Fry's Reagent	4 minutes
	Turner's Reagent	4 minutes
	Davis	2 minutes
	10% nitric	
MH48QJ	Magnetic Particle Inspection (MPI)	
	Turner's Reagent	20-30 minutes spent processing.
	Fry's Reagent	20-30 minutes spent processing.
MKCF3P	MagnaFlux	
	Acidic Ferric Chloride	5 minutes
	Fry's Reagent	1-2 minutes
	Acid Etch Method	5 minutes



TABLE 4

Recovery Methods		
WebCode	Method	Time
MNBRXP	MagnaFlux	
	Fry's Reagent	30 seconds
	25% Nitric Acid	5 seconds
	Abrasive Eraser	
MRQ98U	MagnaFlux	
MTNC6B	Fry's Reagent	2 x applications - 2 minutes each
MTQZLP	Magnetic Particle Inspection (MPI)	
	Davis	5
	Turner's Reagent	10
	Fry's Reagent	10
MXFNXL	Acid Etch Method	
	Aqua Regia	approximately 1 minute
	Forts solution	multiple applications over approximately 4 minutes
	Acidic Ferric Chloride	approximately 2 minutes
MXH86X	Magnetic Particle Inspection (MPI)	
	Davis	Various times throughout processing
	Turner's Reagent	Various times throughout processing
	Fry's Reagent	Various times throughout processing
	25% Nitric Acid	
MXJ4ET	MagnaFlux	
	Davis	One minute
	Turner's Reagent	One minute
	Fry's Reagent	One minute
MXXTEY	MagnaFlux	
	Acidic Ferric Chloride	20 - 30 seconds - repeated 2-3 times
	Fry's Reagent	20 - 30 seconds - repeated 2-3 times
	20% Nitric Acid	30 seconds
MYBAKL	Magnetic Particle Inspection (MPI)	
	Acid Etch Method	5 sec
	Turner's Reagent	5 sec
	Fry's Reagent	5 sec
N6FH DY	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	5 minutes
	Magnetic Particle Inspection (MPI)	
N9BCBZ	MagnaFlux	
NDQKYZ	MagnaFlux	
	Fry's Reagent	10 minutes
	Nitric acid	4 minutes

TABLE 4

Recovery Methods		
WebCode	Method	Time
NEJKQJ	Acid Etch Method	Two minutes alternatively
NFBLUL	Magnetic Particle Inspection (MPI)	
	Davis Reagent	30 seconds
	Turner's Reagent	1 minute
	Fry's Reagent	2 minutes
	Griffin Reagent	2 minutes
NFE27M	MagnaFlux	
	Turner's Reagent	Swabbed repeatedly for approximately an hour
NJDJ6E	MagnaFlux	
NMCVZE	Magnetic Particle Inspection (MPI)	No acidic method was used
NVPXAM	MagnaFlux	
	Fry's Reagent	approximately 3 minutes
NXDDGA	Acid Etch Method	8 minutes
NXFYDP	Turner's Reagent	1 - 2 minutes
	MagnaFlux	1 - 2 minutes
	Fry's Reagent	1 - 2 minutes
NYQT6H	Fry's Reagent	2 minutes
P69H6J	Magnetic Particle Inspection (MPI)	
	Davis	30 minutes
	Turner's Reagent	20 minutes
	Fry's Reagent	10 minutes
P6DZ8N	MagnaFlux	
	Ferric Chloride	
	Acidic Ferric Chloride	
	Fry's Reagent	
	25% Nitric Acid	
PQRK4N	MagnaFlux	
	Fry's Reagent	Acid was swiped across area repeatedly, seconds at a time
	20% Nitric Acid	Acid was swiped across area repeatedly, seconds at a time
QBBAQL	Magnetic Particle Inspection (MPI)	
	25% Nitric Acid	Approx 1-2 minutes repeatedly

TABLE 4

Recovery Methods		
WebCode	Method	Time
QKG6TQ	Magnetic Particle Inspection (MPI)	
	Turner's Reagent	1 to 2 seconds
	Davis' Solution	1 to 2 seconds
	Fry's Reagent	1 to 2 seconds
	Ferric Chloride Solution	1 to 2 seconds
	Acidic Ferric Chloride	1 to 2 seconds
	10% Nitric Acid	1 to 2 seconds
QLUNPG	Electro-acid	
QM27ND	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	5 minutes
	Magnetic Particle Inspection (MPI)	
QNL2QL	MagnaFlux	
	Turner's Reagent	~30 sec per swab, swiping (R to L), 3 swabs
	Fry's Reagent	~30 sec per swab, swiping (R to L), 3 swabs
QQP97K	Turner's Reagent	Approximately 1-2 minutes
	Turner's Reagent	Approximately 1-2 minutes
R23WAH	MagnaFlux	
	Fry's Reagent	1-3 minutes
	20% Nitric Acid	1-3 minutes
	Acidic Ferric Chloride	1 min
R6LWMC	Fry's Reagent	40 min.
R727L6	Fry's Reagent	35min
R92NBK	Turner's Reagent	10 seconds
	Fry's Reagent	10 seconds
R9L32H	MagnaFlux	
	Fry's Reagent	less than 3 minutes
	MagnaFlux	
RCGWYJ	MagnaFlux	
	Fry's Reagent	seconds - wiped on with swab and wiped off with Kimwipe
	Turner's Reagent	seconds - wiped on with swab and wiped off with Kimwipe
	Davis Reagent	seconds - wiped on with swab and wiped off with Kimwipe
RCLBCK	MagnaFlux	
RJ26A2	Fry's Reagent	5 minutes

TABLE 4

Recovery Methods		
WebCode	Method	Time
RJH7AH	MagnaFlux	
	Fry's Reagent	minutes
	Acidic Ferric Chloride	minutes
	Nitric Acid	minutes
RVCKAF	MagnaFlux	
	Fry's Reagent	40 minutes
	Acid Etch Method	Aqua Regia, 30 minutes
	Turner's Reagent	40 minutes
	Fry's Reagent	20 minutes
	Turner's Reagent	20 minutes
	Acid Etch Method	Fort's Solution, 15 minutes
	Acid Etch Method	Aqua Regia, 20 minutes
	Acid Etch Method	25% Nitric Acid, 20 minutes
	Acid Etch Method	Davis' Reagent, 30 minutes
	Turner's Reagent	30 minutes
	Fry's Reagent	30 minutes
	Acid Etch Method	Aqua Regia, 30 minutes
	Acid Etch Method	Aqua Regia, 20 minutes
	MagnaFlux	
	Acidic Ferric Chloride	10 minutes
	Fry's Reagent	60 minutes
	Turner's Reagent	45 minutes
	Acid Etch Method	Aqua Regia, 45 minutes
	Fry's Reagent	20 minutes
Acid Etch Method	Aqua Regia, 15 minutes	
RX3LDH	MagnaFlux	
	Fry's Reagent	swiped with cotton swab
	nitric	swiped with cotton swab
RZNLFJ	Magnetic Particle Inspection (MPI)	
	Davis	
	Turner's Reagent	
	Fry's Reagent	
T2ZLT6	Fry's Reagent	greater than 20minutes
T6WDYG	MagnaFlux	
	Fry's Reagent	
	Acid Etch Method	20% Nitric Acid; alternated application with Fry's Reagent, for a period of ~20 minutes; intermittent photography and cleaning surface with acetone as well
T6YV6T	Acid Etch Method	Approx 2 min each time
	MagnaFlux	

TABLE 4

Recovery Methods		
WebCode	Method	Time
TEPGA6	Acidic Ferric Chloride	acidic ferric chloride for minutes
	Fry's Reagent	minutes
TGFHGE	Davis	5 minutes
	Turner's Reagent	5 minutes
	Fry's Reagent	5 minutes
TGRHBM	Fry's Reagent	10 - 15 combined
	Acidic Ferric Chloride	2 min
	Acid Etch Method	10 - 15 combined
	MagnaFlux	15 - 20 combined
TJCDR2	Magnetic Particle Inspection (MPI)	
	Reagent by Adler	nearly 6 hours
	Fry's Reagent	nearly 4 hours
	Reagent by WAZAU	nearly 6 hours
TNAWTY	Electro-magnetic	
	Acid Etch Method	15 DAKIKA
TWMNLH	Davis Reagent	approximately 2 minutes
	Turner's Reagent	approximately 3 minutes
	Fry's Reagent	approximately 10 minutes
TXHA9H	Davis Reagent	approx: Swiping 1 min (Alternating)
	Turner's Reagent	approx: Swiping 1 min (Alternating)
	Fry's Reagent	approx: Swiping 1 min (Alternating)
TZMUZN	Magnetic Particle Inspection (MPI)	
	Davis	30 seconds
	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	20 seconds
	Magnetic Particle Inspection (MPI)	
	Davis	10 seconds
	Fry's Reagent	10 seconds
	Turner's Reagent	15 seconds
Magnetic Particle Inspection (MPI)		
U4Z83M	MagnaFlux	
	Fry's Reagent	approx. one minute alternating with Turner's three times
	Turner's Reagent	approx. one minute alternating with Fry's three times
	MagnaFlux	
	Fry's Reagent	approx. one minute alternating with Turner's three times
	Turner's Reagent	approx. one minute alternating with Fry's three times
	MagnaFlux	

TABLE 4

Recovery Methods		
WebCode	Method	Time
UACV3J	MagnaFlux	
	Fry's Reagent	2 minutes
UEJJFL	MagnaFlux	
	Nitric acid	15min
	Fry's Reagent	2min
UL9BEM	MagnaFlux	
	Davis'	swiped with swab
	Turner's Reagent	swiped with swab
	Fry's Reagent	swiped with swab and less than 5min
UXTNVH	Turner's Reagent	five minutes (7X)
	Fry's Reagent	five minutes (2X)
UZ3QPT	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	5 Minutes
V8DGKJ	Magnetic Particle Inspection (MPI)	
VHFFUE	Acid Etch Method	~ 2 minutes (Fort's Solution)
	Acid Etch Method	~3 minutes (Aqua Regia)
	Acid Etch Method	~30 seconds (25% Nitric Acid Solution)
	Turner's Reagent	~4 minutes
VLZEVF	Magnetic Particle Inspection (MPI)	
WMJ2U	MagnaFlux	
	Davis Reagent	2-3 Seconds
	Fry's Reagent	1-2 Seconds
VZVQGD	Fry's Reagent	1 minute for each application
	25% Nitric Acid	<1 minute for each application
WBQJ39	Turner's Reagent	about 30 min
WDHFF8	Magnetic Particle Inspection (MPI)	
	Davis Reagent	5 Minutes
	Turner's Reagent	5 Minutes
	Fry's Reagent	10 Minutes
	Electro-acid	10 Minutes
	Magnetic Particle Inspection (MPI)	
WFLBA7	Magnetic Particle Inspection (MPI)	NO acidic method was used.
WNGBQJ	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	5 minute intervals (21 times)
WQPEMF	MagnaFlux	
	Fry's Reagent	1 minute
	Acidic Ferric Chloride	1 minute
	25% Nitric Acid	1 minute

TABLE 4

Recovery Methods		
WebCode	Method	Time
WYZJXL	Acid Etch Method	Davis ~45 minutes total
	Turner's Reagent	~10 minutes total
	Fry's Reagent	~15-20 minutes total
	Acid Etch Method	Alternate Frys & H3PO4/HNO3 ~10-15 minutes total
	Acid Etch Method	Davis ~3 hours total
WZ9XYZ	Acid Etch Method	Alternate Frys & H3PO4/HNO3 ~30 minutes total
WZ9XYZ	Fry's Reagent	20 Min.
	Turner's Reagent	25 Min.
	David's Reagent	15 Min.
XBD3VM	Acid Etch Method	25% HNO3. The acid was applied on the working surface with swabs, and the acid was left on the surface for a couple of seconds at a time
XE87FE	MagnaFlux	
	Acidic Ferric Chloride	under 1 minute per swab
	Fry's Reagent	under 1 minute per swab
XE9U2X	Fry's Reagent	
XNXHYL	Turner's Reagent	1-3 minutes
	Fry's Reagent	1-3 minutes
XRUBNB	Acid Etch Method	40 minutes
YABREA	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	~5 minutes
	Acid Etch Method	~5 minutes
YGRANB	MagnaFlux	
	Fry's Reagent	~10 seconds/application
	20% Nitric Acid	~10 seconds/application
	Fry's Reagent	~10 seconds/application
	MagnaFlux	
YJFYUA	Fry's Reagent	2hours
	Acid Etch Method	1 hour
YJJ93A	Acid Etch Method	8 min
YNANMB	Davis	~ 2 mins (repeated)
	Turner's Reagent	~ 2 mins (repeated)
	Fry's Reagent	~ 2 mins (repeated)
ZAAE6M	MagnaFlux	
ZGNA2G	Electro-magnetic	
	Acid Etch Method	nitric acid; on for less than 1 minute
ZHN46F	MagnaFlux	

TABLE 4

Recovery Methods		
WebCode	Method	Time
ZHNZFC	Fry's Reagent	~35 minutes
ZLME2F	Acidic Ferric Chloride	3-4 minutes
	Turner's Reagent	1-2 minutes
	MagnaFlux	1-2 minutes
	Ferric Chloride	3-4 minutes
	Davis Reagent	3-4 minutes
ZMFBPA	Davis Reagent	~ 1 minute
	Turner's Reagent	~ 1 minute
	Fry's Reagent	~ 10 Minutes
ZYFBPF	MagnaFlux	
	Davis	Swabbed three times and thin film left for no more than couple minutes.
	Turner's Reagent	Swabbed three times and thin film left for no more than couple minutes.
	Fry's Reagent	Swabbed sixteen times and thin film left for no more than couple minutes.

Response Summary	Participants: 236
<b>Recovery Methods</b>	
<b>Chemical Processing: 206</b>	
<b>Magnetic Processing: 147</b>	
<p>Note: Participants may use more than one sample recovery method therefore the total number of recovery methods reported may not be equivalent to the total number of participants.</p>	



## Additional Comments

TABLE 5

WebCode	Additional Comments
3KM72V	Due to the surface finish on the steel, no surface preparation was done. If the MagnaFlux failed to restore the serial number additional steps to refine the finish would have been taken.
68CWHB	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.
6BLUD4	Acid was not left on the material for any extended time, but rather was swabbed over the obliterated area and wiped away multiple times for approximately 20 minutes.
6CH27G	The bar stock was strongly magnetic, making the Magnaflux react strongly and clump over the stamped surface. A lighter application of magnetic particles helped to resolve the characters better.
6RRY32	Acid was not left on the material for any extended period of time, but rather was swabbed over the obliterated area and wiped away multiple times for approximately 25-30 minutes.
77MVKQ	1. Acid was cleaned with delicate task wipers constantly to write down the characters appearing during each step. After the restoration process, sodium bicarbonate solution was used to neutralize acid residues on the surface. 2. To make the restoration process, the gray rectangular aluminum piece that was submitted along with Item 1, was used for size and shape reference purposes.
7FX7Q	1. The acid was cleaned with delicated task wipers, constantly to write down the characters appering during each step. 2. To make the restoration process, the gray rectangular aluminum piece that was submitted along with Item 1, was used for size and shape reference purposes.
7UD9FY	Used magnaflux to verify serial number. Characters in spaces 3 and 4 were difficult to restore.
7VQHT7	Milling appeared to be deeper than last year's test
8PCD8W	Evidence Inventoried on 9/6/2024. Rectangular, magnetic, metal bar. Area obliterated by an unknown type abrasive method. Obliterated area was magnetically treated utilizing black magnaflux and then polished, again magnetically treated utilizing black magnaflux, then chemically treated utilizing Davis, Turner, and Fry's reagents. Serial number restored to read F7C10A.
8U93N4	Submission 01 is a tape sealed manila envelope labeled in part "Sample pack SNR2." It contains two tape sealed manila envelopes labeled "Aluminum Standard" and Item 1." Item Aluminum Standard is an aluminum bar approximately 1" x 2" x 1/4". It has the letters "ABCDEFHJKN" stamped on one side and the numbers "0123456789" stamped below the letters. Not further examined. Item 1 is a steel bar approximately 1" x 2 1/2" x 1/4". It has a machined area on one side that is approximately 1 1/2" wide. I used sanding, chemical etchants, and magnetic particle inspection to restore the obliterated area to F 7 C 1 0 A.
9M8Z6P	Upon visual inspection of defaced area and determining ferrous metal, MagnaFlux was applied with positive results. No polishing or sanding was required.
9MBJCZ	I suspect that the unrestorable character may be a "2", but I am not confident enough to report this.

TABLE 5

WebCode	Additional Comments
A3EL2J	TEST No. 24-5251, ITEM 1: The roughened area of the steel bar was visually observed under a magnifying glass, the area was cleaned, the roughened area was lightly sanded using 320 grit sandpaper with a saturated sodium bicarbonated solution, the area to be worked on was cleaned with a papel tower, a swab soaked in concentrated nitric acid was used and the area to be worked on was slowly moved in one direction over the roughened area in order to view alphanumeric characters. Once the alphanumeric characters were seen, a swab soaked in Fry reagent was used and the area was moved slowly in one direction in order to view and photographically fix the alphanumeric characters seen. The following restored serial number was seen. "F7C10A", which has physical characteristics of shape and size similar to the standard alphanumeric characters on the aluminum bar used as a standard. It is worth mentioning that after having carried out the serial number restoration, the worked area was neutralized with saturated sodium bicarbonate solution.
A8M63X	Polishing was done after chemical restoration had already been started.
AQ6WAA	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.
AYEB7J	TEST No. 24-5251, ITEM 1: The roughened area of the steel bar was visually observed under a magnifying glass, the area was cleaned, the roughened area was lightly sanded using 320 grit sandpaper with a saturated sodium bicarbonate solution, the area to be worked on was cleaned with a papel toewl, a swab soaked in concentrated nitric acid was used and the area to be worked on was slowly moved in one direccction over the roughened area in order to view alphanumeric characters. Once the alphanumeric characters were seen, a swab soaked in Fry reagent was used and the area was moved slowly in one direction in order to view and photographically fix the alphanumeric characters seen. The following restored serial number was seen: "F7C10A", wich has physical characteristics of shape and size similar to the standard alphanumeric characters on the aluminum bar used as a standard. It is worth mentioning that after having carried out the serial number restoration, the worked area was neutralized with saturated sodium bicarbonate solution.
BH69KG	n order to detect the number on the engraved surface, the surface is examined using physical, electromagnetic and chemical methods; It has been determined that the number consists of letters and numbers that can be read as 'F7C10A'. Kind Regards
C9U7YF	When applying magnaflux the approximate time is 5 minutes
DJCXAB	The third ("C") and fifth ("0") characters were very difficult to restore. Could only visualize them after a long time with chemical etching and magnaflux.
FYYZWT	We believe that the number was poorly struck on our plate, and that the alteration was very deep, so it was not possible to restore the number.
GH6YFD	resaltación positiva en la placa de acero inoxidable. [Requested translation was not provided by time of publication.]
GTMQQ9	The "0" numeric appeared to not have been stamped as deeply as the other characters in the serial number.

TABLE 5

WebCode	Additional Comments
HB2EQM	In the report a section would contain the name of the examiner and the results of the serial number restoration; also within the case file would be a detailed Serial Number Restoration Form which includes the lot numbers of all chemicals used, the results of the examination, the examiner, and the dates for performing the restoration. For this proficiency exam, the results of the restoration are found above and the examiner was Corporal [Name] - see physical copy of test and test answers for more information.
HN7Q3F	1. The metal piece, identified as "Aluminum Standard", describe in piece 1 "Item 1", was as a character reference. [Initials] 4/sept/2024 2. After restoration process, sodium bicarbonate solution was used to neutralize acid residues on the surface. [Initials] 4/sept/2024
HQZACU	Total time spent using Fry's reagent or 25% Nitric Acid was approximately 4-5 hours over two separate days. Swabs of Fry's reagent/25% Nitric Acid were alternating and used interchangeably. Periodically acid/Fry's reagent was removed from the area and Magnaflux was reapplied. This was to better visualize the characters and an attempt to better obtain images of the progress of the restoration. Since there was approximately 4-5 hours spent using chemical restoration techniques on and off, it was listed on the previous page that Fry's reagent and 25% Nitric Acid were each on the sample for 2 hours. One light polishing was done shortly after the chemical restoration was started in order to try and better image the characters. Other light polishings were done on the sample after it had set with the chemicals wiped off and a thin layer of rust had formed. The polishing was simply to remove the thin layer of rust.
HV7RKV	As received, the serial number on the steel bar was obliterated. Using chemical etching techniques, the serial number was restored to F7C10A. Please refer to Serial Number Restoration Worksheet for further information on the chemical restoration process. The firearm was photographed during the restoration process on 8/26/24.
J9AV3U	Corrected Typo
JE2WRN	After a significant amount of time (~ 30-40min total) using chemical etchants only three characters were able to be deciphered. Magnaflux Magnaglo was used as a last resort which caused the other characters to be deciphered.
KREXCJ	magnetic studied
L3WPLE	For casework, I would report my findings as follows: Standard serial number restoration techniques revealed the following latent characters: ?7C10A where the question mark represents an "E", or "F". For the purposes of this test, F7C10A was reported.
LENBRA	The partially restored stamp at position 3 in the serial number sequence was interpreted as probably being the letter C or possibly the number 0. The 5th character in the sequence was possibly the letter C or the numbers 0 or 6. As stated in the conclusion, the restored characters at these positions were too indistinct to allow a more meaningful conclusion.
LM3ACM	Acid was not left on the material for any extended time but was swabbed over the obliterated area and wiped away multiple times for approximately 10-15 minutes.
MTQZLP	Magnetic particle inspection was used first. I then switched to chemical etching to get the first character to stand out better. I started with Davis then alternated between Turner's and Fry's.
MXFNXL	Bar Stock is magnetic. No initial polishing was necessary to prepare obliterated surface for the application of chemical etching solutions.

TABLE 5

WebCode	Additional Comments
MXH86X	There appears to be a second "1" stamped on the steel bar, but the spacing did not appear similar to the distances between the rest of the characters. It was not clear if this was part of the serial number or not. The chemicals used (David, Turner's, and Fry's) did not work well with the material of this steel bar and the best results obtained were with MPI. There is no information on the actual structure of the serial number (i.e. three letters followed by three numbers). The only information given is that there were six characters.
NFE27M	MagnaFlux was applied during the verification process (after chemical processing) for better visualization of characters.
QKG6TQ	There is no description as far as how many characters there are to be recovered. It would be appreciated if you could provide the character count along with the standard. This particular test was difficult to recover and I was unable to determine til after several hours of processing that there should have been 6 characters, one of which never became visible.
QNL2QL	Full restoration only visible with the test sample placed at an angle. Magnet had to be placed in the center of the obliterated area.
R23WAH	Magnaflux was used to determine approximate location of obliterated characters. Magnaflux and chemical restoration was attempted prior to polishing. Magnaflux and chemical restoration were used alternatively throughout the restoration process. Total time using acidic chemicals was approximately 20 minutes.
RZNLFJ	MPI restored SN. Used chemical etching techniques to attempt to visualize SN seen during MPI but it was unsuccessful.
T6WDYG	Given the smoothness of the surface of the area of obliteration as received, polishing was not deemed necessary. The techniques applied were in the following order: 1) Magnaflux (1st application) 2) 20% Nitric Acid/Fry's reagent (alternating swabs of each for a period of ~20 minutes) 3) Magnaflux (2nd application) Area of obliteration cleaned with acetone and covered with Rem oil after restoration process was complete.
TJCDR2	no preparing by sanding or polishing first, because in case of "no result" we couldt prepare further everytime
TXHA9H	Davis, Turner's and Fry's reagents were used over approximately 60mins. The reagents were alternated as needed to observe the characters and photographs were taken.
VZVQGD	The third and fifth characters (if any) were unable to be restored after several attempts of polishing and chemical application.
WBQJ39	The serial number was partially restored were out of six (6) characters four (4) characters were completely restored, one partially and one has not been restored The restored characters are: F 7 _ 1 _ A The third character is partially restored it can be O ore C. The fifth character has not been restored
WYZJXL	During the initial application of Fry's, the metal began to corrode and turn a pinkish/orange color in the area of obliteration as well as the surrounding surfaces. The times associated with application of various etchants are the total time spent on one reagent; however, the application was performed with various swabs and wiped off in between versus the chemicals being pooled and left to sit for the time indicated.
WZ9XYZ	The magnet was used determine magnetic properties and magnifying glass used for inspection. [Initials] August/27/ 2024

TABLE 5

WebCode	Additional Comments
XNXHYL	During the serial number restoration process, the surface of the steel bar stock formed blisters. The blisters were created when a thin layer of metal (?) on the surface of the steel bar stock started to "peel away" from the surface. Eventually, the thin layer was able to be peeled off from the surface of the steel bar stock.
YNANMB	No acid was left on the surface for an extended time. The surface containing the obliterated serial number was swabbed and wiped multiple times for approximately 20-25 minutes.
Z7NJHU	Methods: Serial Number Restoration Magnetic, thermal, and chemical methods may be used for the restoration of serial numbers. Conclusions regarding restored characters are made by visual examination of the restored surface under a variety of lighting conditions. Information regarding the alpha-numeric structure or the general location of serial numbers is obtained when necessary from reference sources or from firearms in the Laboratory's Reference Firearms Collection. Limitations: Serial Number Restoration Except for the magnetic method, serial number restoration is a destructive examination and it is possible that the obtained results may not be reproduced in any subsequent examinations. Restored serial numbers are sometimes only visible during a portion of the reconstruction process, and are not necessarily visible at the conclusion of the process.
ZAAE6M	The characters were visible utilizing the Magnaflux technique. Chemical etching was not needed.
ZYFBPF	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. Please note all measurements are approximate.

-End of Report-  
(Appendix may follow)

## Test No. 24-5251: Serial Number Restoration

DATA MUST BE SUBMITTED BY **Sept. 09, 2024, 11:59 p.m. EDT** TO BE INCLUDED IN THE REPORT

Participant Code: U1234A

WebCode: AUBU86

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 barstock to represent the orientation.*

### Items Submitted (Sample Pack SNR2):

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

### 1.) Please record the restored characters below.

The serial number on this material consists of 6 characters.

Item 1:

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

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

**3.) What preparation methods were used prior to attempts at restoration?**

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

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

**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?
<input type="text"/>	<input type="text"/>

## 5.) Additional Comments

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



## RELEASE OF DATA TO ACCREDITATION BODIES

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

CTS submits external proficiency test data directly to 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)