



Serial Number Restoration

Test No. 20-5251 Summary Report

Each participant received a sample pack containing a piece of metal bar stock, which had been stamped with a six-character serial number that was then obliterated. Also included was a piece of aluminum bar stock intended as a standard for the size, shape and positioning of the stamped characters. Participants were asked to restore the obliterated serial number and report their findings. Data were returned from 213 participants and are compiled into the following tables:

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

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

Manufacturer's Information

Each sample set consisted of a piece of steel bar stock that contained an obliterated serial number (Item 1) and a piece of aluminum bar stock intended as a standard for the size, shape, and positioning of the stamped digits. Participants were requested to attempt to restore the obliterated serial number utilizing their laboratory restoration methodologies and report the recovered serial number. The serial number to be restored consisted of 6 characters (H5KF4E).

SAMPLE PREPARATION:

Each sample set contained a piece of steel bar stock that was stamped with six characters (H5KF4E). The serial number was then obliterated by a milling machine.

A piece of aluminum bar stock was also included in the sample as a reference standard. The alphanumeric characters provided are digits 0-9 and letters A-F, H, J, K and N.

SAMPLE SET ASSEMBLY:

Each Item 1 bar stock and aluminum standard bar stock were separately enclosed in chip board, with the sides taped for security and then placed in their respective pre-labeled envelopes. Every sample pack was packaged to contain an Item 1 and aluminum standard. This process was repeated until all of the sample packs were prepared. Once verification was completed, all sample packs were sealed with a piece of evidence tape and initialed "CTS."

VERIFICATION:

Two of the three predistribution laboratories restored the obliterated six-character serial number and reported "H5KF4E" and used a magnetic restoration method. The remaining predistribution laboratory reported "H5(B or 8)F4E and used multiple chemical restoration methods to process the Item 1 bar stock.

Summary Comments

This test was designed to allow participants to assess their proficiency in the restoration of an obliterated serial number. Participants were provided with a piece of metal bar stock that contained an obliterated serial number (Item 1) and a piece of aluminum bar stock intended as a standard for the size, shape and positioning of the stamped characters. Participants were requested to restore the obliterated serial number utilizing their laboratory recovery methodologies and report the recovered serial number. The serial number to be restored consisted of 6 characters (H5KF4E). (Refer to Manufacturer's Information for preparation details.)

Of the 213 responding participants in Table 1 (Recovered Characters), 167 (78%) restored the six characters consistent with the Manufacturer's Information. Twenty-five participants restored five of the six characters, 18 participants reported less than five characters and three participants were unable to restore any of the characters of which were reported in the Manufacturer's Information.

Participants were least successful at identifying character 2 where the expected response was "5" and character 4 where the expected response was "F". For character 2, out of the 13 participants that either reported multiple probable characters or left this response blank, six reported the possibility that the character could have been a "5". For character 4, out of the 21 participants that either reported multiple probable characters or left this response blank, ten reported the possibility that the character could have been an "F".

In Table 3 (Sample Preparation), the majority of participants used polishing, sanding, or visual methods to prepare their sample. In Table 4 (Recovery Methods), the majority of participants used a combination of both chemical and magnetic restoration methods.

Recovered Characters

Please record the recovered characters below.

TABLE 1

Recovered Characters						
WebCode	Character 1	Character 2	Character 3	Character 4	Character 5	Character 6
22GT6L	H	5	K	F	4	E
248VCU	H	5	K	F	4	E
287BGC	H	5	K	F	4	E
2H3GCV	H	5	K	F	4	E
2RR6AJ	H	5	K	F	4	E
2YFK3W	H	5	K	F	4	
3TKH6A	H	5	K	F	4	E
3W8VDT	H	5	K	F	?	E
44YPPG	H	5	K	F	4	E
48JEAU	H	5	K	F	4	E
49TNXK	H	5	K	F	4	E
4CBTRA	H	5	K	F	4	E
4EFGAK	H	5	K	F	4	E
4KM32N	H	5	K	F	4	E
4M9U6D	H	5	K			E
4N7X6F	H	5	K	F	4	E
4QEALH	H	5	K	F	4	E
4V6P8H	H	5	K	F	4	E
63XCFU	H	5	K	F	4	E
66NHVK	H	5	K	F	4	E
6A6HHR	H	5	K	F	4	E
6VYPQE	H	?	K	F	4	E
6XQQMQ	H				4	7

TABLE 1

Recovered Characters						
WebCode	Character 1	Character 2	Character 3	Character 4	Character 5	Character 6
6ZX2LE	H	*	K	F	4	E
7H9FGE	H	5	K	F	4	E
7HUQFM	H	5	K	F	4	E
7MNRFG	H	5	K	E	4	E
7QNV9N	H			F	4	E
863JXC	H	5	K	F	4	E
8922TJ	H	5	K	F	4	E
8BMJDP	H	5	K	F	4	E
8CXLYN	H	5	K	F	4	E
8DDQUF	H	B	K	F	4	E
8ELXYU	H	5	K	F	4	E
8H8KRG	H	5	K	F	4	E
8WABCL	H	5	K	F	4	E
8YWUDJ	H	5	K	F	4	E
92UVQL	3	D	5		5	H
97QEXQ	H	5	K	F	4	E
99FTF9	H	5	K	F	4	E
9A8JRE	H	5	K	F	4	E
9K8EL4	H	5	K	F	4	E
9METBH	H	5	K	F	4	E
9P34BN	H	5	K	(E,F)	4	E
9QWUEG	H	5	K	F	4	E
9T2KE6	H	5	K	F	4	E
9Z3UUB	H	5	K	F	4	E
A433XK	H	5	K	F	4	E

TABLE 1

Recovered Characters						
WebCode	Character 1	Character 2	Character 3	Character 4	Character 5	Character 6
A6AH6Q	H	5	K	F	4	E
A847P8	H	5	K	F	4	E
A8ZNLG	H	5	K	F	4	E
AGQAQF	H	5	K	F	4	E
AHVYR3	H	5	K	F	4	E
AUR2CK	H	5	K	F	4	E
AWJZQH	H	5	K	F	4	E
AY6QU9	H	5	K	F	4	E
B4FERA	H	5	K	F	4	E
B7YBDE	H	5	K	F	4	E
BBXKNG	H	5	K	F	4	E
BGZUUA	H	5	K	F	4	E
BHVG8D	H	5	K	F	4	E
BQMVBj	H	5	K	F	4	E
BVFWAC	H	5	K	F	4	E
BVHLJF	H	5	K	F	4	E
BYF87C	H	5	K	F	4	E
C7FR42	H	5	K	F	4	E
CBPZDJ	H	5	K	F	4	?
CDDCCN	H	5	K	F	4	E
CQ7XHJ	H	5	K	F	4	E
CQKKU7	H	5	K	F	4	E/K
CU6AEJ	H	5	K	F	4	E
D2JHFL	H	5	K	F	4	E
D9ZX6A	H	5	K	F	4	E

TABLE 1

Recovered Characters						
WebCode	Character 1	Character 2	Character 3	Character 4	Character 5	Character 6
DJYRFL	H	5	K	F	4	E
DL6C78	H	5	K	F	4	E
DLPXWC	H	5	K	E	4	E
DMX3CL	H	5	K	F	4	E
DVEJ3B	H	5	K	F	4	E
E2X4PM	H	*	K	F	4	E
E4K68F	H	5	K	F	4	E
E79G7L	H	5	K	F	4	E
ECRLX2	H	5	K	F	4	E
ED4GG8	H	5	K	F	4	E
EEJKBY	H	5	K	F	4	E
EMVUKD	H	?	K	?	?	?
EQXTV7	H	5	K	F	4	E
ERQTTG	H	5	K	F	4	E
ETHPHB	H	5	H	E	4	E
EVP376	H	5	K	F	4	E
F9UHPE	H	-	K	-	4	E
FHD22X	H	5	K	F	4	E
FURY73	H	*	K	F	4	E
FY4XL2	H	5	K	F	4	E
G3XBJB	H	5	K	F	4	E
G7GDMA	H	5	K	F	4	E
GF8QQF	H	5	K	F	4	E
GHXX87	H		K		4	E
GQTVZ2	H	5	K	F	4	E

TABLE 1

Recovered Characters						
WebCode	Character 1	Character 2	Character 3	Character 4	Character 5	Character 6
GWC4H7	H	?	K	F	4	E
GXQPR8	H	5	K	F	4	E
H92L8V	H	5	K	F	4	E
HE6KK7	H	5	K	F	4	E
HJMQEV	11	5	K	F	4	E
HXJ3MY	H	5	K	F	4	E
HZA7KC	H	5	K	F	4	E
JCWR4C	H	5	K	F	4	E
JKRTMB	H	?	K	F	4	E
JT7EVF	H	5	K	F	4	E
JT8C7B	H	5	K			E
JVXBKA	H	5	K	F	4	E
K2UPK2	H	5	K	F	4	E
K4LQHC	H	5	K	F	4	E
KA9F68	H	5	K	F	4	E
KDAN7W	H	5	K	F	4	E
KG9Z3W	H	5	K	F	4	E
KJEFHE	H	5	K	F	4	E
KLZACU	H	5	K	F	4	E
KTK7H6	H	5	K	F	4	E
KYRWKB	H	5	2	F	4	E
L2EQ2C	H	5	K	F	4	E
L42A3A	H	5	K	F	4	E
LFAAHY	H	5	K	F	4	E
LG4ZNE	H	5	K	F	4	E

TABLE 1

Recovered Characters						
WebCode	Character 1	Character 2	Character 3	Character 4	Character 5	Character 6
LKPH7Y	H	5	K	F	4	E
LKPMG2	H	5	K	F	4	E
LPGPN8	H	5	K	F	4	E
M4ZUBU	H	5	K	F	4	E
MEXULD	H	5	K	F	4	E
MFPQB8	H	5	K	?	?	E
MJNA9Y	H	5	K	2	?	E
MQL2E8	H	5	K	F	4	?
MWYHDC	H	5	K	F	4	E
N7GNGT	H	5	K	F	4	E
N8AETZ	H	5	K	F	4	E
N9HNGQ	H	5	K	F	4	E
NHBYT8	H	5	K	F	4	E
NMGTM3	H	5	K	F	4	E
NU6FH9	H	G	R	F	4	E
NVX9DQ	H	5	K	F	4	E
NZJNPN	H	5	K	F	4	E
P47YY3	H	5	K	F	4	E
P63GXX	H	5	K	F	4	E
P93MFA	H	5	K	F	4	E
PFHLNU	H	5	K	F	4	E
PGALL6	H	5	K	F	4	E
PLQM8C	H	5	K	F	4	E
PQG4J3	H	5	K	F	4	E
QA8UW8	H	5	K	F	4	E

TABLE 1

Recovered Characters						
WebCode	Character 1	Character 2	Character 3	Character 4	Character 5	Character 6
QCYQK2	H	5	K	F	4	E
QD77R8	H	5	K	F	4	E
QEKGNR	H	5	K	F	4	E
QFX2G2	H	?	K	E/F	?	E/F
QKAWG6	H	5	K	F	4	E
QWKMVZ	H	5	K	F	4	E
QY9YU7	H	5	K	F	4	E
QZ2UJZ	H	5	K	E		E
R2VZCY	H	5	K	F	4	E
R3ZPDM	H	5	K	F	4	E
R9TPU3	H	5	K	F	4	E
REWQX4	H	5	K	F	4	E
RGK3XA	H	5	K	F	4	E
RX9FB2	H	5	K	F	4	E
T6BMQ4	H	5	K	F	4	E
T76DUX	H	5	K	F	4	E
T7ZZ9M	H	5	K	F	4	E
T8VUQR	H	*	K	*	4	*
T9PKW7	H	5	K	F	4	E
TK3KRY	H	5	K	F	4	E
TMQWR6	H	5	K	F	4	E
TPDXAX	H	5	K	F	4	E
TPURB8	H	5	K	F	4	E
TRKXQX	H	5	K	F	4	E
TZFVH8	H		K	F	4	E

TABLE 1

Recovered Characters						
WebCode	Character 1	Character 2	Character 3	Character 4	Character 5	Character 6
U729WZ	H	5	K	F	4	E
UBRMG2	H	5	K	F	4	E
UEAYZ4	H	5	K	F	4	E
UF3VNW	H	5	K	F	4	E
UFKR9J	H	5	K	F	4	E
UHNMRM	H	?	K	?	4	?
UHURB7	H	5	K	F	4	E
UKU6QH	H	5	K	F	4	E
VFJ9NU	H	5	K	E	4	E
VDXJQ	H	5	K	F	4	E
VW38PL	H	5	K	F	4	E
W7983T	H	K	E			E
W9EW3G	H	5	K	F	4	E
WAPUFY	H	5	K	?	4	E
WCFTUW						
WH3MRU	H	5	K	F	4	E
WJFFLW	H	5	K	F	4	E
X7KLPT	H	?	?	?	?	?
XD89JY	H	(5)	K	*	4	E
XEXAPM	H	5	K	F	4	E
XEXEZP	H	5	K	F	4	E
XGQBMX	H	5	K	E	4	E
XK3DDZ	H	B	K	F	4	E
XMRKTQ						
XTH26G	H					

TABLE 1

Recovered Characters						
WebCode	Character 1	Character 2	Character 3	Character 4	Character 5	Character 6
XY4UGF	H	5	K	F	4	E
Y36D2U	H	5	K	F	4	E
YANG9W	H	5	K	F	4	E
YAXM6X	H	5	K	F	4	E
YEEVTW	H	5	K	F	4	E
YKKM2U	H	5	K	F	4	E
YPUZJT	H	5	K	F	4	E
Z7XUQT	H	5	K	F	4	E
ZAGNTK	H	5	K	F		E
ZBBEYZ	H	5	K	F	4	E
ZCP4ZQ	H	5	K	F	4	E
ZF2THE	H	5	K	F	4	E
ZFJXXR	H	5	K	F	4	E
ZND3RT	H	5	K	F	4	E
ZWRW3P	H	5	K	E	4	E

Response Summary						Participants: 213
	Character 1	Character 2	Character 3	Character 4	Character 5	Character 6
Consensus	H	5	K	F	4	E
Number	209	188	202	186	198	201
Percent	98.1%	88.3%	94.8%	87.3%	93.0%	94.4%

Conclusions

TABLE 2

WebCode	Conclusions
22GT6L	1-Item No. 1 is a metal piece with the following dimensions: length = 67mm, width = 27mm and height = 7mm. Visual examination of the evidence shows the existence of a scratches on one side of the part, caused by milling. the size of scrtched zone is approximatively: length=27mm, width=27mm and depth=0.7 mm. 2-The chemical restoration of the serial numbers which had been altered by milling was positive and the result of this revelation is: H4KF4E.
248VCU	Q-1, ONE (1) PIECE OF STEEL (APPROX. 2 5/8" x 1" x 1/4") SUBMITTED WITH A SUSPECTED OBLITERATED SERIAL NUMBER. A ONE INCH SQUARE AREA OF SURFACE REMOVED BY A DRILLED/CUTTING DEVICE. SERIAL NUMBER "H5KF4E" RESTORED USING MAGNETIC PARTICAL INSPECTION PROCESS (MPI) & CHEMICAL ETCHING RESTORATION, SCRIBED WITH NUMBER "20-5251B" BY EXAMINER.
287BGC	Restoration Results : H5KF4E
2H3GCV	The serial number of the alloy steel bar stock, described in the item 001, was restored and corresponds to: H5KF4E.
2RR6AJ	An examination was conducted on Item 1 (Test No.20-5251). The item is a piece of bar stock, approximately 65mm in length and 25mm in width, with a rough ground area (approximately 25mm square) in the central area of the bar. The item was photographed and a serial number restoration was carried out with the following characters developed - H5KF4E. The characters were compared using a known reference sample of alphanumeric numbers used in the manufacturing process. The developed characters had a similar font and size to the reference sample provided.
2YFK3W	The characters believed to be: H 5 K _ F 4 _ were observed during analysis and processing of the defaced area on the metal. The _ represents characters that could not be determined.
3TKH6A	Examination of the bar stock in Item #1 revealed an obliterated area. Standard restoration techniques revealed the characters "H5KF4E".
3W8VDT	Restoration of the obliterated serial number was performed on the questioned surface of the 4140 alloy steel bar stock labelled "Item 1". The restored serial number was found to have six characters - "H 5 K F ? E". The fifth character (?) was not decipherable.
44YPPG	The serial number on the steel bar stock, item 1, was observed to have been obliterated. Polishing and magnetic particle inspection techniques were used to restore the obliterated serial number to: "H 5 K F 4 E."
48JEAU	As a result of an attempted obliterated number restoration the following characters were observed: H5KF4E
49TNXK	The original serial number was removed by mechanical procedures (milling). After carrying out restoration work it was determined that the original serial number was H5KF4E.
4CBTRA	Standard restoration techniques revealed the following characters on the steel bar stock in Item #1: H5KF4E
4EFGAK	The obliterated number on Item 1 was polished and chemically restored to reveal the serial number H5KF4E.
4KM32N	Item #1 was received with the serial number obliterated. The following characters were recovered using standard serial number restoration techniques: H5KF4E.
4M9U6D	The following characters were restored following chemical etching: H 5 K __ E. The fourth and fifth characters in the sequence were very faint and had the appearance of F and 4 respectively. However, these characters were not well defined and could not be reported
4N7X6F	Examination of the submitted metal bar stock found the manufacturer's serial number to have been obliterated. Physical and chemical processing of the submitted metal bar stock restored the obliterated, original serial number to read "H5KF4E".

TABLE 2

WebCode	Conclusions
4QEALH	The restored serial number was: H5KF4E
4V6P8H	The serial number had been erased. I was able to restore the serial number, which read H5KF4E
63XCFU	Examinations showed the serial number of Item 1 to be obliterated. The serial number was restored using magnetic particle restoration and chemical etching techniques and was found to be: H5KF4E.
66NHVK	Using magnetic and chemical methods, the obliterated serial number on Item 001 was restored to read H5KF4E. Item 002 was inventoried and photographed.
6A6HHR	SERIAL NUMBER "H5KF4E" WAS RESTORED USING MAGNETIC PARTICLE INSPECTION METHOD.
6VYPQE	Mechanical and Chemical processing of the submitted piece of 4140 alloy steel bar stock revealed that the original serial number is H?KF4E, where the question mark (?) represents a B, D, 5 or 6.
6XQQMQ	Attempts were made to restore the obliterated serial number using electro-chemical etching and magnetic particle inspection equipment. The serial number was partly recovered and found to be: "H????47" (? = character could not be identified).
6ZX2LE	Physical and Chemical processing of the obliterated serial number revealed the original number to be H*KF4E, where the * denotes a character which could be a B, D, 5 or 6.
7H9FGE	The obliterated serial number was mechanically and chemically restored and reads: H5KF4E.
7HUQFM	The Exhibit's surface was lightly polished, using grinding paper 120 and 600. The polished surface was then treated with Fry's reagent. The results were successfully photographed.
7MNRFG	Not sure about the fourth character, could also be an F, or something else.
7QNV9N	The hypothesis that serial number is "H__ F 4 E" is strongly supported. The hypothesis that the second and the third number is "8 4 " is proposed (H84F4E).
863JXC	1) The obliterated area on Exhibit 1 (Metal Bar Stock) was processed using standard serial number restoration techniques to reveal the following: H 5 K F 4 E.
8922TJ	Prepared the surface of item 1 applies nondestructive method of magnaflux and obtain alphanumeric characters H5KF4E.
8BMJDP	[No Conclusions Reported.]
8CXLYN	ONE (1) PIECE OF STEEL BAR STOCK (1" X 2 1/2") SUBMITTED WITH A SUSPECTED OBLITERATED SERIAL NUMBERS. APPROXIMATELY 1" X 1" AREA OF SURFACE DEFACED THROUGH ABRASIONS/GRINDING. SERIAL# H5KF4E RESTORED USING MAGNETIC PARTICLE INSPECTION PROCESS. EVIDENCE SCRIBED "CTS 20-5251G" BY EXAMINER FOR IDENTIFICATION PURPOSES. NOTE: ABOVE EVIDENCE WAS SUBMITTED IN A TAN ENVELOPE LABELLED "2020 CTS FORENSIC TESTING PROGRAM, TEST NO. 20-5251G: SERIAL# RESTORATION SAMPLE PACK: SNR2".
8DDQUF	[No Conclusions Reported.]
8ELXYU	The serial number on the item #1 metal bar was raised, by acid etching, to be: H5KF4E
8H8KRG	Using standard laboratory techniques, the obliterated serial number on Item 001-01 was restored to read "H5KF4E". No examination performed on the Item 001-02 aluminum standard.
8WABCL	Standard serial number restoration techniques revealed the following characters "H5KF4E".
8YWUDJ	The obliterated serial number was electromagnetically processed and was restored to read H5KF4E.
92UVQL	Restoration process revealed a six-digit marking: Position 1. 3 Position 2. D Position 3. Probably 5 Position 4. indistinguishable Position 5. Probably 5 Position 6. H
97QEXQ	Examination of Item 1 revealed the serial number had been obliterated. Using standard physical and chemical restoration techniques, the obliterated serial number was restored to read: H 5 K F 4 E.
99FTF9	The serial number was determined to be "H5KF4E."

TABLE 2

WebCode	Conclusions
9A8JRE	Through a combination of mechanical polishing, magnetic particle inspection, and chemical etchant, the serial number for item 1 was restored to read H5KF4E.
9K8EL4	The restoration of Item #1 revealed the characters "H5KF4E".
9METBH	Examination of the steel bar in Item #1 revealed an obliterated area. Standard restoration techniques revealed the following characters: "H5KF4E"
9P34BN	Item 1-1 A piece of 4140 alloy steel bar stock with suspected obliterated serial number: Visual examination of this item revealed the presence of grind marks on one side of the bar stock. This area was magnetically processed and etched with acid solutions, and the following was restored: H 5 K (E,F) 4 E () indicates a possible character due to an incomplete restoration.
9QWUEG	The primary meaning of the obliterated text was H5KF4E.
9T2KE6	THE SURFACE OF Q1 (ITEM 1) METAL BAR STOCK WAS POLISHED TO PREPARE IT FOR MAGNETIC AND CHEMICAL RESTORATION. THE NUMBER RESTORED BY THE SERIAL NUMBER RESTORATION PROCESS READS: H5KF4E
9Z3UUB	Submission 001 proficiency test was examined and photographed before polishing the obliterated surface with a Dremel tool. Chemical etchants were applied to the polished surface in an effort to restore the serial number, the serial number was restored to read H5KF4E.
A433XK	The obliterated area of the metal block on exhibit 1A was mechanically and magnetically processed for serial number restoration. The fully restored serial number is as follows: H5KF4E. Exhibit 1B was a reference standard and was not processed. The conclusions in this report are the opinion of the undersigned examiner. When a conclusion is verified, it is also the opinion of the verifier.
A6AH6Q	Item 2 is a section of steel bar stock with an obliterated serial number. Using standard restoration techniques, the obliterated serial number on Item 2 was restored to read: H 5 K F 4 E.
A847P8	The serial number that was restored is interpreted to H5KF4E.
A8ZNLG	Item #1.1 is a metal bar stock, serial number obliterated. The obliterated serial number is located on the front side of the bar. Dremel polishing, acid etching, and magnetic particle inspection (MPI) were performed and it was determined that the obliterated serial number was restored to read H5KF4E.
AGQAQF	The number on piece of 4140 alloy steel bar stock was found to be invisible and restored number is "H5KF4E".
AHVYR3	Lab Item(s)#: 1, Restoration Results: H5KF4E
AUR2CK	Item 001 is a small piece of ferrous metal bar stock with alpha/numeric characters that have been removed by mechanical means. The alpha/numeric characters were restored, using mechanical and chemical methods, as: H 5 K F 4 E Item 001-A is a non-ferrous metal bar stock exhibiting alpha/numeric character standards. Item 001 is being retained in the Firearms section at the laboratory.
AWJZQH	Recovered characters: H5KF4E
AY6QU9	The serial number was determined to be "H5KF4E."
B4FERA	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 H5KF4E.
B7YBDE	The serial number "H5KF4E" was stamped on the examined piece of stainless steel bar stock.
BBXKNG	The following characters were restored on Item #1: H5KF4E.
BGZUUA	Serial Number Restoration Analysis: Methodology: Physical (Visual Examination), Microscopy (Comparison Microscope), Magnetic Particle Inspection, Chemical (Reagent Etching). Serial number restoration procedures revealed the serial number on Item 1A, the bar stock, to be: H5KF4E

TABLE 2

WebCode	Conclusions
BHVG8D	Using standard laboratory restoration techniques, the obliterated serial number on Item 001-01 was restored to read H5KF4E.
BQMVB	Chemical restoration on steel sample. start time : 08h45 Finish time : 10h00 2nd et 3rd characters (5 and K) are just shadow at start and nothing more after few minutes. Don't know how they are stamped on sample (process ?)
BVFAC	Using standard laboratory restoration techniques, the obliterated serial number on Item 001-01 was restored to read H5KF4E.
BVHLJF	Lab Item(s)# 1-1 Restoration Results H5KF4E
BYF87C	The obliterated number on item (1) was polished, and chemically restored to reveal the serial number (H5KF4E)
C7FR42	Lab Item #1 Restoration Results H5KF4E
CBPZDJ	One (1) ferrous bar stock with 1"x1" section removed from center, with an obliterated serial number. Serial number restoration using magnetic particle inspection and chemical restoration techniques resulted in a partial recovery of H5KF4?, last character is a possible E or F.
CDDCCN	Examination and processing of the Q-1 bar stock (Item 1) restored the original obliterated serial number, which was determined to be H5KF4E.
CQ7XHJ	Serial numbers were recovered using the magnetic particles method
CQKKU7	The serial number was restored to H 5 K F 4 E/K, where the last character could not fully be resolved to distinguish conclusively whether it was an E or a K.
CU6AEJ	The serial number is obliterated. Chemical restoration techniques and Magnetic Particle inspection resulted in a full restoration "H5KF4E".
D2JHFL	Standard serial number restoration techniques revealed the following characters "H5KF4E"
D9ZX6A	The procedure was carried out in compliance with the parameters established in the guide for the analysis and restoration of serial numbers, erased or altered [Document Number] and in accordance with the magnetic method, obtaining the indicated results.
DJYRFL	Using standard laboratory physical restoration techniques, the obliterated serial number on Item 1 was restored to read H5KF4E.
DL6C78	The serial number on the submitted test specimen was restored to: "H5KF4E."
DLPXWC	IT IS ESTABLISHED THAT THE SURFACE OF THE PLATE SUFFERED AN ALTERATION, SINCE IT WAS ERASED IN ITS ENTIRETY, A CHEMICAL REAGENT WAS APPLIED TO THE SURFACE, MANAGING TO RESTORE THE FOLLOWING ALPHANUMERIC SERIES H5KE4E.
DMX3CL	Using standard laboratory restoration techniques, the obliterated serial number on the steel bar stock was restored to read: "H 5 K F 4 E".
DVEJ3B	Item#1 is a piece of 4140 alloy steel bar stock with suspected obliterated serial number. The obliterated serial number is located in the center of the bar stock. Dremel polishing, acid etching, and magnetic particle inspection (MPI) procedures were performed and the serial number was restored to read H5KF4E.
E2X4PM	The number H*KF4E was partially restored via chemical restoration techniques. The * represents an unknown character.
E4K68F	The Item 1 metal bar was physically, magnetically and chemically processed in an attempt to restore the obliterated serial number with the following result: The serial number was restored to read H 5 K F 4 E. The serial number was not searched in any database as part of this analysis.
E79G7L	RESULTS OF EXAMINATION: Serial Number Restoration Results Examination, magnetic, and chemical processing of the Q-1 steel bar restored the original obliterated serial number which was determined to be 'H5KF4E'.

TABLE 2

WebCode	Conclusions
ECRLX2	Based on the above examination and findings, I am on my opinion that the original serial number on a alloy steel bar stock "item 1" is "H5KF4E".
ED4GG8	[No Conclusions Reported.]
EEJKBY	Results in chart format. Item # Restoration Results 1 H5KF4E. [Participant created a manually formatted table within the free form text space. This special formatting was not transferable into the final report. Data is presented as is.]
EMVUKD	The following findings reflect the professional opinion of the examiner authoring this report. Examination of Item 1 revealed one (1) metal bar stock with suspected serial number obliterated. Using chemical and physical restoration techniques, an attempt was made to restore the serial number with the following results: Serial Number: H ? K ? ? ? was restored on Item 1. The depth of metal removed from the serial number area precluded a successful full restoration.
EQXTV7	The serial number was determined to be: H5KF4E
ERQTTG	The serial number of the piece of metal "stainless steel bar", described in item 1, was restored and corresponds to: H5KF4E.
ETHPHB	THE RESTORED SERIES IS ORIGINAL.
EVP376	Examination of the submitted alloy steel bar stock, labeled Item 1, found the manufacturer's original serial number to have been obliterated. Physical and magnetic processing of the alloy steel bar stock restored the obliterated, original serial number to read "H5KF4E".
F9UHPE	The serial number of the metal bar stock, Lab Evidence# 001-A1, was partially restored and determined to be H_K_4E, with the underlined spaces not clearly being determined.
FHD22X	SERIAL NUMBER RESTORATION PROCESS CONSISTING OF THE USE OF A DREMEL TOOL, MAGNETIC, AND CHEMICAL ETCHING SOLUTION METHODS RESTORED SERIAL NUMBER: H5KF4E
FURY73	Attempts to physically and chemically restore the obliterated serial number of the piece of steel, Laboratory Item 1, were partially successful. The partially recovered serial number is H*KF4E with the asterisk representing an unrestoreable character consistent with a 3, 5, 6, 8, 9, or B.
FY4XL2	Standard serial number restoration techniques revealed the following characters: H5KF4E.
G3XBJB	The following findings reflect the professional opinion of the examiner authoring this report. Examination of Item 1 revealed one (1) metal bar stock with suspected obliterated serial number. Using standard serial number restoration techniques, an attempt was made to restore the serial number with the following results: Serial Number: H 5 K F 4 E was restored on Item 1.
G7GDMA	The serial number of item 1 was restored to read H5KF4E this conclusion was verified by other firearms examiner in our lab.
GF8QQF	Examination and restoration of the obliterated area on Item 1 (a piece of bar stock) revealed the following characters: "H5KF4E".
GHXX87	The serial number was partially restored to read: H ? K ? 4 E. The second (2nd) and fourth (4th) characters were not restored, indicated by a question mark (?) above. The third (3rd) and fifth (5th) characters appeared faint and dissipated and appeared to be as indicated.
GQTVZ2	Serial Number Restoration Analysis: Methodology- Physical (Visual Examination), Microscopy (Comparison Microscope), Chemical (Reagent Etching), Magnetic Particle Inspection. Serial number restoration procedures revealed the serial number on Item 1, the bar stock, to be: H 5 K F 4 E

TABLE 2

WebCode	Conclusions
GWC4H7	A 68mm X 28mm length of alloy steel bar stock was examined. A 25mm wide section in the centre of one side of the bar stock had been milled, removing approximately 0.37mm from the steel surface. Chemical treatment of the milled surface resulted in the restoration of what appeared to be a six (6) digit series of letter and number stamps. The second digit in the series was unclear and unable to be fully restored, apart from partially visible aspects of the stamp that suggested the number three (3) or five (5). Taking the partially restored second digit into account, the restored characters appeared to read H (3 or 5) K F 4 E
GXQPR8	AFTER APPLICATION OF THE ELECTROMAGNETIC AND CHEMICAL PROCESS, WE DETERMINED THE NUMBER OF THE METAL BAR STOCK AS "H5KF4E"
H92L8V	Examination of the submitted item revealed an obliterated serial number. Standard restoration techniques revealed the characters "H5KF4E".
HE6KK7	Using standard laboratory restoration techniques, the obliterated serial number on item 001-01 was restored to read "H5KF4E". No examination was performed on Item 001-02 aluminum standard.
HJMQUEV	Item #1 bar stock was received with an obliterated area. Upon restoration, the following characters were recovered. " 1 1 5 K F 4 E".
HXJ3MY	The obliterated area on the piece of 4140 alloy steel bar stock in item 1 was chemically etched and the serial number was determined to be H5KF4E.
HZA7KC	Serial number restored to read H5KF4E.
JCWR4C	The serial number of the steel bar, described in the item 1, was restored and correspond to: H5KF4E.
JKRTMB	After a preliminary magnetic investigation method, the obliterated serial number has been restored by using sandpaper and acid (Fry and Wazau). Finally a thermal restoration method was used, but brought no further insights. The second character could not be determined exactly, because of too low expression. It could be "5".
JT7EVF	Serial Number Restoration Findings: H5KF4E
JT8C7B	The serial number on the steel bar stock (Exhibit 01) was mechanically and chemically treated and partially restored to read H5K**E. The asterisk represents characters that could not be restored.
JVXBKA	Serial Number Restoration Lab Item(s)# Restoration Results 1 H5KF4E
K2UPK2	The following characters were revealed in the obliterated area using magnetic particle inspection: H 5 K F 4 E. The characters were not fully restored using chemical restoration techniques.
K4LQHC	The serial number of the steel bar, described in the item 1, was restored and correspond to: H5KF4E.
KA9F68	The serial number H5KF4E was recovered using the technical not destructive and not invasive method electro-magnetic "MAGNAFLUX".
KDAN7W	The metal block (item number: 001) was visually and microscopically inspected for any observed digits, letters, or characters. None were observed. The aluminum standard block (item number: 002) was visually inspected to note the overall appearance of the known characters. The suspect serial number area on item number: 001 was sanded and polished and then chemically treated to restore the serial number. The following letters and digits were noted during the restoration examination: H 5 K F 4 E.
KG9Z3W	In preparation for the application of acid, the area/location of the serial number on Item 1.01 was sanded and polished. After applying Restore-A-Gel for steel, the serial number was observed to be H5KF4E.
KJEFHE	Item #1 (~steel bar stock with suspected obliterated serial number) was examined on 9/1/2020 and found to contain an area of obliteration with overlapping circular signatures. Serial Number Restoration commenced and was completed on 9/1/2020. Serial Number Restoration was successful. The serial number on Item #1 (bar-stock) was recovered as: H5KF4E.
KLZACU	Item 1 Serial Number Restoration results: H5KF4E

TABLE 2

WebCode	Conclusions
KTK7H6	Using standard laboratory techniques, the obliterated serial number on the Item 001-01 steel bar stock was restored to read H5KF4E. No examination was conducted on the 001-02 Aluminum Standard.
KYRWKB	Based on the above findings, in my professional opinion; i. The obliterated serial number on the item 1 was partially restored and found to be H 5 2 F 4 E.
L2EQ2C	Attempts to restore the obliterated serial number were successful. The restored serial number is: "H5KF4E"
L42A3A	WE HAVE USED NON DESTRUCTIVE METHOD FOR THE SUSPECTED OBLITERATED SERIAL NUMBER. MAGNET AND MAGNAFLUX WERE USED IN THIS METHOD.
LFAAHY	Item 1 exhibited an area of obliteration. Chemical and mechanical restoration techniques were applied and the serial number H5KF4E was recovered. Sub-item 1B was not examined.
LG4ZNE	Visual examination, polishing, and chemical treatment restored the obliterated serial number on Item 1 to read "H5KF4E".
LKPH7Y	Examination of the submitted alloy steel bar stock found the manufacturer's serial number to have been obliterated. Physical and magnetic processing of the alloy steel bar stock restored the obliterated, original serial number to read "H5KF4E".
LKPMG2	The serial number on the piece of bar stock, Exhibit 1, was determined to be: H 5 K F 4 E
LPGPN8	The obliterated serial number on the item A1-1 was restored and found to be H-5-K-F-4-E.
M4ZUBU	Restoration by chemical etching revealed a set of original serial number to be 'H5KF4E'.
MEXULD	Visual inspection of Item 1 revealed a defaced area on one side of the evidence. The defaced area on Item 1 was magnetically and chemically processed, resulting in a full recovery of the Item 1 serial number. The recovered number reads as follows: H5KF4E.
MFPQB8	The serial number on the piece of metal (Exhibit 1) was mechanically and chemically treated and was partially restored to read H5K??E". The "?" represents unrestorable characters.
MJNA9Y	The serial number was forensically restored and read H5K2?E. The second last character was unable to be restored with a ? inserted as a placeholder.
MQL2E8	The obliterated area of Item #1 was microscopically examined and chemically processed and the original obliterated serial number was determined to be "H5KF4?". The question mark represents fragments of a character which could not be fully determined.
MWYHDC	Restoration Results: H5KF4E
N7GNGT	The serial number of Item 1 was restored using mechanical polishing, Magnetic Particle Inspection (MPI) and chemical etching techniques and was found to be: H5KF4E.
N8AETZ	in the result of examination the following signs would be restored/recovered: "H 5 K F 4 E"
N9HNGQ	Item A was submitted with no serial number visible. Polishing and chemical restoration made the following characters visible – "H5KF4E".
NHBYT8	Based on my finding, I am of the opinion that the steel bar was tampered. After the analysis the original number was restored and read as H5KF4E
NMGTM3	The serial number restored by electromagnetic method (MAGNAFLUX) on the obliterated portion of metal bar stock (item 1) is H5KF4E.
NU6FH9	Item 1 was visually examined, and photographed. The item was a piece of steel bar with an obliterated area in the center of one side. The obliterated area appeared to be circular, similar to the grinding wheel of a dremel type tool. The obliterated area was polished with sandpaper starting with course, then fine grit. The area was then treated with Frye's chemical reagent. The serial number was revealed at the end of this process to be "HGRF4E". Photographs of the steps were conducted throughout the process.

TABLE 2

WebCode	Conclusions
NVX9DQ	Item #1 was received with a suspected obliterated serial number. Attempts to restore the serial number with polishing and chemical processing were done. The best observation of the obliterated serial number is "H5KF4E". The first, third, fourth, and last character were successfully restored to "H", "K", "F", and "E", respectively, however the second and fifth characters were not clear. The best observation of the second character is a "5" however, the character could include but it not limited to being a B,2,3,6,8 or a 9. The best observation of the fifth character is a "4", however, the character could but is not limited to being an H,K,1, or a 7.
NZNJNP	In preparation for the application of acid, the area/location of the serial number on Item 1.01 was sanded and polished. After applying Restore-A-Gel for steel, the serial number was observed to be H5KF4E.
P47YY3	Examination revealed an area of obliteration. Restoration techniques applied to this area revealed the following characters: H5KF4E
P63GXX	Following a magnetic particle serial number restoration process, I restored the serial number on the Steel Bar Stock to be H5KF4E
P93MFA	Serial number restoration for Item #1 recovered the following characters "H5KF4E".
PFHLNU	The serial number was restored to read: H5KF4E.
PGALL6	Serial number restoration techniques were applied to the defaced area. Obliterated serial number was restored to read "H5KF4E"
PLQM8C	The item #1's S/N was fully restored to H5KF4E.
PQG4J3	After to apply electromagnetic method, we determined the number of the bar stock is H5KF4E.
QA8UW8	Standard restoration techniques revealed the following characters "H5KF4E."
QCYQK2	Standard restoration techniques revealed the following characters: H5KF4E.
QD77R8	During standard restoration techniques the following characters were recovered: H5KF4E
QEKGNR	Physical examination led to the conclusion that the submitted plate was made of steel. Chemical and mechanical processing of the submitted plate revealed the following erased numbers: H 5 K F 4 E. H, 5, K, and E were recognized with no doubt, while F and 4 were not well developed.
QFX2G2	where the "?" represents an unknown character and "E/F" represents either an "E" or "F".
QKAWG6	The serial number was fully restored to read "H5KF4E".
QWKMVZ	After application of the electro-magnetic process, We determined the serial number of the stainless steel bar stock as H5KF4E.
QY9YU7	Through the chemical process it was determined that: 1. The serial number on the bar stock, described in Item 1, was restored and corresponds to: H5KF4E.
QZ2UJZ	IT WAS PROCEEDED TO TREAT WITH CHEMICAL, THE SURFACE WHERE THE MODIFICATION COMES OF THE PIECE SENT TO BRANDS AND PATRONS, RESTORING THE FOLLOWING CHARACTERS MENTIONED ABOVE.
R2VZCY	Item #1.1 is a metal bar, serial number obliterated. The obliterated serial number is located on the flat side of the bar. Chemical etching and Magnetic Particle Inspection procedures were performed and it was determined that the obliterated serial number was restored to read: H5KF4E. Analysis Start Date: 7/29/2020
R3ZPDM	Items Submitted: 1 Test No. 20-5251 & Aluminum Standard; Serial Number Restoration Results H5KF4E
R9TPU3	Through examination and processing of the 4140 alloy steel bar stock, the obliterated serial number was fully restored to read 'H5KF4E'.

TABLE 2

WebCode	Conclusions
REWQX4	Q-1 IS ONE SILVER METAL OBJECT (MO-1), CONSISTENT WITH FERROUS METAL BAR STOCK. SERIAL NUMBER OBLITERATED BY AN UNKNOWN METHOD, HOWEVER, MO-1 DISPLAYS DEEP MILLING MARKS ON OBLITERATED AREA. SERIAL NUMBER RESTORED USING A COMBINATION OF POLISHING, CHEMICAL ETCHING TECHNIQUES, AND THE USE OF MAGNETIC PARTICLE INSPECTION (MAGNAFLUX). SERIAL NUMBER OF H5KF4E SUCCESSFULLY RECOVERED. MO-1 MARKED WITH CASE NUMBER "20-5250" FOR IDENTIFICATION.
RGK3XA	Restoration procedures on exhibit SNR2 revealed the serial number to be: H 5 K F 4 E
RX9FB2	The obliterated serial number on Item 1 was restored and interpreted as "H5KF4E".
T6BMQ4	As a result of an attempted obliterated number restoration the following characters were observed: H5KF4E
T76DUX	The serial number on alloy steel bar stock (Item 1) was restored and found to be "H5KF4E"
T7ZZ9M	Examination of the bar stock in Item #1 revealed an obliterated area. Restoration of the obliterated area revealed the characters H5KF4E.
T8VUQR	An obliterated area was found on the center of Item 20-5251.A. Standard serial number restoration techniques were used to reveal the following characters: H*K*4*. The first * is representative of the characters 5 or 6, the second * is representative of the characters F or P, and the third * is representative of the characters E or B. Item 20-5251.B was received and noted; but, not further analyzed.
T9PKW7	Examination, magnetic and chemical processing restored the original obliterated serial number of Item 1, which was determined to be "H5KF4E".
TK3KRY	Item #1: One piece of steel bar stock with an obliterated serial number. Findings: Standard serial number restoration techniques revealed the following characters "H5KF4E".
TMQWR6	Acid etching chemicals and magna flux were utilized to restore the obliterated serial number. The serial number was restored and is: H5KF4E.
TPDXAX	Recovered characters - H5KF4E
TPURB8	Examination and chemical processing of the K-1 bar stock restored the original obliterated serial number which was determined to be "H5KF4E".
TRKXQX	The examination and processing of the obliterated serial number on the Item 1 piece of steel was restored to read "H5KF4E".
TZFVH8	The serial number on the Item 01-01 steel bar stock was partially restored to read "H_KF4E", where "_ " represents an unrecovered character.
U729WZ	The serial number on the steel bar stock was mechanically and chemically treated and restored to read H5KF4E.
UBRMG2	after etching H?KF?E.In my opinion number was H5KF4E. Magnaflux confirmed after etching.
UEAYZ4	Standard restoration techniques revealed the following characters: H5KF4E
UF3VNW	Restoration Results: H5KF4E
UFKR9J	Item #1 was observed to have an obliterated area. Restoration of the obliterated area on Item #1 yielded the following characters: H5KF4E
UHNMRM	STEEL BAR (1) WAS PHYSICALLY/CHEMICALLY/MAGNETICALLY PORCESSED. ITS SERIAL NUMBER WAS PARTIALLY RESTORED TO READ H?K?4?.
UHURB7	Using physical and magnetic laboratory restoration techniques, the obliterated serial number on Item 1 was restored to read H5KF4E.
UKU6QH	Examination of Item #1 revealed an obliterated area on the center of the alloy steel bar stock. Standard restoration techniques revealed the following characters "H5KF4E".

TABLE 2

WebCode	Conclusions
VFJ9NU	IT SUFFERED AN ALTERATION AND ITS SERIES WAS ERASED IN ITS TOTALITY AND IT WAS RESTORED.
VWXJQ	A sample of rectangular steel (approx 67mm in length, 26mm width and 7mm thickness) with grinding marks to one surface, was treated with Fry's Reagent. During the treatment process a series of alpha numeric characters were recovered, being H5KF4E. These characters occupied an area of approximately 20mm x 5mm, and were positioned about the midline of the sample, amongst the grinding marks. The characters recovered appeared consistent with the front and size to that of the reference (supplied by CTS and marked Aluminium Standard Test No. 20-5251).
VW38PL	I examined and chemically processed Item 1 and I determined the obliterated serial number to be "H5KF4E".
W7983T	It suffered an alteration and its series was erased in its entirety and it was restored with chemical reagent to restore its original series
W9EW3G	Examination of the piece of metal in Item #1 revealed an obliterated area on the surface. Standard restoration procedures revealed the characters "H5KF4E".
WAPUFY	The Item 1 metal bar was physically, magnetically and chemically processed in an attempt to restore the obliterated serial number with the following result: The serial number was partially restored to read H 5 K ? 4 E where the question mark represents an unknown character that could either be an F, E, B or D. The serial number was not searched in any database as part of this analysis.
WCFTUW	Efforts to restore the serial number on Item 1 were unsuccessful.
WH3MRU	Item #1 is a piece of 4140 alloy steel bar stock, serial number obliterated. Dremel polish, chemical etching, and Magnetic Particle Inspection procedures were performed and the serial number was restored to read: H5KF4E.
WJFFLW	Restoration results H5KF4E
X7KLPT	H?, the "?" represents an unknown number of total characters
XD89JY	Visual examination of this item revealed the presence of polish marks on the center of the steel bar. This area was magnetically processed and etched with acid solutions, and the following was restored: H (5) K * 4 E () indicates a possible character due to an incomplete restoration. The * represent characters which could not be identified.
XEXAPM	Examination of the submitted bar stock found the manufacturer's serial number to have been obliterated. Physical processing of the submitted bar stock restored the obliterated, original serial number to read "H5KF4E".
XEXEZP	The serial number on the bar stock, Exhibit 1, was determined to be H5KF4E.
XGQBMX	On examination, I found that no number on the alloy steel bar stock. However, I observed the surface of the alloy steel bar was filed. After electrochemical treatment, the obliterated serial number was restored and read as "H5KE4E".
XK3DDZ	1. Examination of Exhibit 1 revealed one piece of ferromagnetic metal measuring 67.75mm long, 27.57mm wide, and 7.55mm thick. a. There is an obliterated area in the approximate center of Exhibit 1 measuring 26.30mm long and 27.57mm wide. b. Standard serial number restoration techniques revealed the following characters: H B K F 4 E. Please note all measurements are approximate.
XMRKTQ	The piece shows wear in the middle part. After applying the corresponding reagents, it was not possible to restore any of the deleted characters.
XTH26G	The obliterated serial number on the steel bar stock in Item #1 was partially restored and found to be H ? ? ? ? *. The question marks represent unknown/unrecoverable characters and the asterisk indicates the character could be either the number "5" or the letter "E".
XY4UGF	Restoration Results: H5KF4E
Y36D2U	The serial number of Submission 1 as restored is H5KF4E.

TABLE 2

WebCode	Conclusions
YANG9W	The item 1 (LIMS #1-1-1) bar stock with obliterated area was examined and processed using standard serial number restoration techniques. The serial number was restored to read: H5KF4E.
YAXM6X	A six digit alphanumeric serial number was successfully restored by chemical treatment to read: H 5 K F 4 E
YEEVTW	After application of the electromagnetic and chemical process in Item 1, I determined the serial number as H5KF4E.
YKKM2U	Standard serial number restoration techniques were used on Item #1-1 which revealed the characters "H5KF4E".
YPUZJT	The serial number of the 1 x 3 block of metal (Item 1) was restored to be H5KF4E.
Z7XUQT	Examination of Item #1-1 revealed an obliterated area. Standard serial number restoration techniques recovered the characters "H5KF4E".
ZAGNTK	Using the magnetic particle restoration and acid-etch methods, the number on the steel bar stock (Item 1) was partially restored as " H 5 K F ? E " where "?" represents an undetermined character. No further examinations performed on the aluminum standard.
ZBBEYZ	Examination of the obliterated serial number on the Item 1 steel bar stock, was found to be "H5KF4E".
ZCP4ZQ	Restoration Results H5KF4E
ZF2THE	Using the magnetic testing method, the obliterated Serial-number appeared under ultraviolet light.
ZFJXXR	The serial number on the bar stock (1) was determined to be H 5 K F 4 E.
ZND3RT	The serial number on Item 1 was restored and determined to be the following: H5KF4E
ZWRW3P	The series suffered an alteration since it was erased in its entirety and the restored alphanumeric series is original since it presents the same morphology of the standard sample sent.

Sample Preparation

(listed in order of use)

TABLE 3

Sample Preparation			
WebCode	Method	Tool Used	Grit Size
22GT6L	Cleaning	Acetone	
248VCU	Polishing	Dremel	UNK
287BGC	Cleaning	Acetone	
	Visual	Stereoscope	
	Polishing	Rotary Tool	
2H3GCV	Visual	Magnifying Glass and Microscope	N/A
	Cleaning	Acetone	N/A
	Sanding	Sand paper	100, 220
	Polishing	Sand paper	500
2RR6AJ	Sanding	Emery paper	Varied from P400 P1200
2YFK3W	Polishing	Dremel	
3TKH6A	Polishing	Dremel	
3W8VDT	Polishing	Sand paper	60, 120, 360, 800, 1000, 1500
44YPPG	Visual	Stereoscope	
	Polishing	Emery paper	
	Polishing	Steel wool	
48JEAU	Grinding	Dremel	
	Sanding	Sand paper	Fine
	Visual		
49TNXK	Sanding	Sand paper	P240 & P600
	Polishing	Dremel	
4CBTRA	Visual	Stereoscope	
	Polishing	Dremel	
4EFGAK	Polishing	Dremel	
4KM32N	Visual	Stereoscope	
4M9U6D	Sanding	Sand paper	

TABLE 3

Sample Preparation			
WebCode	Method	Tool Used	Grit Size
4N7X6F	Polishing	Dremel	
4QEALH	Visual	magnifier	
	Grinding	Dremel	
	Polishing	Dremel	
	Polishing	Sand paper	600 grit wet
4V6P8H	Visual	Microscope	
	Polishing	Rotary Tool	
	Polishing	Emery paper	1200
63XCFU	Polishing	Dremel	
66NHVK	Polishing	Dremel	
6A6HHR	Polishing	Dremel	
6VYPQE	Sanding	Sand paper	200
6XQQMQ	Sanding	Sand paper	
	Cleaning	Acetone	
6ZX2LE	Polishing	Sand paper	200
7H9FGE	Polishing	Dremel	
7HUQFM	Sanding	Sand paper	120 and 600
7MNRFG	Grinding	Sand paper	Very fine
	Cleaning	Acetone	
7QNV9N	Sanding	Emery paper	
863JXC	Visual		
	Polishing	Dremel	
8922TJ	Visual	Stereoscope	
	Polishing	Dremel	
8BMJDP	Polishing	Rotary Tool	
8CXLYN	Grinding	Dremel	
8DDQUF	Sanding	Dremel	80
	Polishing	Dremel	
8ELXYU	Polishing	Dremel	

TABLE 3

Sample Preparation			
<u>WebCode</u>	<u>Method</u>	<u>Tool Used</u>	<u>Grit Size</u>
8H8KRG	Visual	Stereoscope	
8WABCL	Polishing	Dremel	
8YWUDJ	Cleaning	Acetone	
	Grinding	Rotary Tool	240
	Sanding	Sand paper	320
92UVQL	Sanding	Sand paper	800, 1000, 1200, 1500, 2000
	Polishing	Rotary Tool	polishing paste
	Cleaning	paper towel	
97QEXQ	None		
99FTF9	None		
9A8JRE	Visual	Stereoscope	
	Polishing	Dremel	
9K8EL4	Visual		
	Polishing	Dremel	
	None		
9METBH	Visual	Stereoscope	
9P34BN	None		
9QWUEG	Sanding	Sand paper	500
9T2KE6	Polishing	Dremel	
9Z3UUB	Polishing	Dremel	
A433XK	Polishing	Dremel	220
A6AH6Q	Polishing	Rotary Tool	
A847P8	None		
A8ZNLG	Polishing	Dremel	
AGQAQF	Sanding	Sand paper	80-120
AHVYR3	Visual		
	Polishing	Dremel	

TABLE 3

Sample Preparation			
WebCode	Method	Tool Used	Grit Size
AUR2CK	Sanding	hand held detail sander	200
	Polishing	Emery paper	100
AWJZQH	None		
AY6QU9	None		
B4FERA	Polishing	Dremel	
B7YBDE	Polishing	Sand paper	P800 - P1200
BBXKNG	Visual	Stereoscope	
BGZUUA	None		
BHV8D	Sanding	Sand paper	P180
	Polishing	Dremel	
BQMVB	Cleaning	Acetone	
	Polishing	Sand paper	
BVFWAC	Sanding	Dremel	
BVHLJF	Polishing	Dremel	
BYF87C	Visual		
	Polishing	Dremel	
C7FR42	Polishing	Dremel	
CBPZDJ	None	Rotary Tool	
CDDCCN	Polishing	Dremel	n/a
CQ7XHJ	Sanding	Sandpaper	120
CQKKU7	Polishing	Dremel	
	Visual	Stereoscope	
CU6AEJ	Polishing	Rotary Tool	
D2JHFL	Polishing	Dremel	
D9ZX6A	Polishing	Rotary Tool	no applica
DJYRFL	Sanding		60, 220
DL6C78	Polishing	Dremel	
DLPXWC	Visual	SANDPAPER	360

TABLE 3

Sample Preparation				
WebCode	Method	Tool Used	Grit Size	
DMX3CL	Cleaning	Ethanol	n/a	
DVEJ3B	Polishing	Dremel	N/A	
E2X4PM	Polishing	Sand paper	P400	
E4K68F	Polishing	Dremel		
E79G7L	Cleaning	Kimwipe		
	Visual	Stereoscope		
	Polishing	Dremel		
	Visual	Stereoscope		
ECRLX2	None			
ED4GG8	Visual	HAND LENCE		
EEJKBY	Polishing	Dremel		
EMVUKD	None			
EQXTV7	None			
	Polishing	Dremel		
ERQTTG	Visual	Stereoscope	100	
ETHPHB	Visual	SANDPAPER	360	
EVP376	Grinding	Dremel		
	Polishing	Rotary Tool		
F9UHPE	Grinding	Dremel		
	Polishing	Dremel		
FHD22X	Polishing	Dremel		
FURY73	Sanding	Sand paper	400	
	Polishing	Dremel		
FY4XL2	Visual	Stereoscope		
	Polishing	Dremel		
G3XBJB	Polishing	Dremel	N/A	

TABLE 3

Sample Preparation			
WebCode	Method	Tool Used	Grit Size
G7GDMA	Visual	Stereoscope	
	Cleaning	Acetone	
	Grinding	Dremel	
	Polishing	Sand paper	600
GF8QQF	Polishing	Rotary Tool	
	Cleaning	Acetone	
GHXX87	Visual		NA
	Polishing	Dremel	NA
	Polishing	Repeated after below acids	NA
GQTVZ2	None		
GWC4H7	Visual	Microscope	800 grit emery paper
	Polishing	Emery paper	wet & dry paper
	Sanding	Rubberised wheel	
	Cleaning		
GXQPR8	Polishing	Dremel	
	Cleaning	Rotary Tool	
	Visual	FELT AND POLISHING LIQUID	
H92L8V	Polishing	Dremel	
HE6KK7	Visual	Stereoscope	
HJMQEV	Polishing	Dremel	
HXJ3MY	Visual	Stereoscope	
	Polishing	Dremel	
HZA7KC	Polishing	Dremel	Cratex Extra Fine
JCWR4C	Polishing	Sand paper	220/500
JKRTMB	Polishing	Sand paper	400
JT7EVF	Polishing	Rotary Tool	
JT8C7B	Polishing	Dremel	
JVXBKA	None		
K2UPK2	Polishing	Dremel	

TABLE 3

Sample Preparation			
WebCode	Method	Tool Used	Grit Size
K4LQHC	Polishing	Sand paper	100, 500
KA9F68	Visual	Stereoscope	
	Cleaning	Acetone	
	Sanding	Sand paper	400 and 600
KDAN7W	Visual	Stereoscope	
	Polishing	Sand paper	600, 800, 1500
	Cleaning	Acetone	
KG9Z3W	Sanding	Sand paper	80 through 1500
KJEFHE	Cleaning	Acetone	
	Polishing	Dremel	
	Cleaning	Ethanol	
KLZACU	None		
KTK7H6	None		
KYRWKB	Sanding	Sand paper	320-grit size
L2EQ2C	Polishing	Steel wool	
	Sanding	Sand paper	Fine
L42A3A	Sanding	Sand paper	600
LFAAHY	Sanding	Sand paper	220C Norton
LG4ZNE	None		
LKPH7Y	Sanding	Sand paper	A-500
LKPMG2	Polishing	Dremel	600
LPGPN8	Grinding	Dremel	150
	Polishing	Dremel	
M4ZUBU	Sanding	Abrasive paper	400
	Cleaning with water/ethanol	Cotton wool	
MEXULD	Polishing	Dremel	
MFPQB8	Visual		
	Polishing	Dremel	#74 Fine Cratex Wheel

TABLE 3

Sample Preparation				
WebCode	Method	Tool Used	Grit Size	
MJNA9Y	Sanding	Emery paper	3M ultra fine grain wet/dry emery paper	
	Polishing	Rotary Tool	Rubber Wheel	
MQL2E8	Polishing	Dremel	100, 180 and 240 grit	
MWYHDC	Visual	Stereoscope		
	Polishing	Dremel		
N7GNGT	Polishing	Dremel	N/A	
N8AETZ	Visual	Stereoscope		
N9HNGQ	Polishing	Dremel	N/A	
NHBYT8	Cleaning	Acetone		
NMGTM3	Visual	Stereoscope		
	Cleaning	Acetone		
	Grinding	Rotary Tool		
	Sanding	Sand paper	420	
NU6FH9	Polishing	Sand paper	220	
	Polishing	Sand paper	600	
	Cleaning	Acetone		
NVX9DQ	Polishing	Dremel	N/A	
NZNJNP	Sanding	Dremel	60	
	Sanding	Sand paper	220	
	Sanding	Emery paper	1200	
	Polishing	METAL POLISH		
P47YY3	Visual	Stereoscope		
	Polishing	Dremel		
P63GXX	Sanding	Emery paper	240, 400, 600 and 1200 grit sandpaper	
P93MFA	Polishing	Dremel		
PFHLNU	Polishing	Dremel	P320	
PGALL6	None			
PLQM8C	Polishing	Dremel		

TABLE 3

Sample Preparation			
<u>WebCode</u>	<u>Method</u>	<u>Tool Used</u>	<u>Grit Size</u>
PQG4J3	Sanding	Sand paper	420
QA8UW8	Polishing	Dremel	
QCYQK2	Visual	Stereoscope	
QD77R8	Polishing	Dremel	
QEKGNR	Sanding	Sand paper	N/A
	Polishing		
QFX2G2	Visual	Stereoscope	
QKAWG6	Polishing	Dremel	
QWKMVZ	Visual	Microscope	
	Grinding	Rotary Tool	
	Polishing	Sand paper	400
QY9YU7	Cleaning	Acetone	
	Visual	Stereoscope	
	Polishing	Dremel	rubberized abrasive wheel fine grit
QZ2UJZ	Cleaning	SANDPAPER	360
R2VZCY	Polishing	Dremel	
R3ZPDM	Polishing	Dremel	
R9TPU3	Visual		
	Polishing	Dremel	
REWQX4	Polishing	Dremel	
RGK3XA	Visual	Stereoscope	
	Polishing	Rotary Tool	
RX9FB2	Polishing	Rotary Tool	N/A
T6BMQ4	None		
T76DUX	Polishing	Sand paper	Fine
T7ZZ9M	Polishing	Dremel	
T8VUQR	Polishing	Dremel	
T9PKW7	Polishing	Rotary Tool	

TABLE 3

Sample Preparation			
<u>WebCode</u>	<u>Method</u>	<u>Tool Used</u>	<u>Grit Size</u>
TK3KRY	Visual		
TMQWR6	Sanding	Sand paper	800
	Polishing	Steel wool	NA
TPDXAX	None		
TPURB8	Polishing	Dremel	
TRKXQX	Visual	Stereoscope	
	Polishing	Dremel	600
	Sanding	Dremel	600
TZFVH8	Polishing	Dremel	N/A (Polishing Wheel)
	Sanding	Sand paper	600
U729WZ	Polishing	Dremel	
UBRMG2	Polishing	Sand paper	400, 600, 1200
UEAYZ4	Polishing	Rotary Tool	
UF3VNW	None	magnifying visor	
UFKR9J	Visual	Stereoscope	
	Cleaning	Acetone	
	Polishing	Dremel	
UHNMRM	Sanding	Sand paper	FINE O11K
UHURB7	Sanding	Sand paper	
UKU6QH	Polishing	Dremel	
VFJ9NU	Visual	SANDPAPER	360
VDXJQ	Visual		
	Sanding	Sand paper	60, 120, 240, 600, 1200
	Cleaning	Wet rag	Wet rag
	Visual		
VW38PL	Polishing	Dremel	
W7983T	Visual	SANDPAPER	360
W9EW3G	Polishing	Dremel	
WAPUFY	Polishing	Dremel	

TABLE 3

Sample Preparation				
WebCode	Method	Tool Used	Grit Size	
WCFTUW	Polishing	Emery paper	640	
WH3MRU	Polishing	Dremel		
WJFFLW	Polishing	Dremel		
X7KLPT	Polishing	Dremel		
XD89JY	Visual	Stereoscope		
XEXAPM	Polishing	Dremel		
XEXEZP	Polishing	Dremel	various	
XGQBMX	Cleaning	Acetone	n/a	
XK3DDZ	Sanding	Sand paper	180/400	
	Polishing	Dremel		
XMRKTQ	Cleaning	Paint Thinner		
	Cleaning	Sand paper	No. 100	
XTH26G	None			
XY4UGF	Polishing	Dremel		
Y36D2U	Visual	Stereoscope		
	Sanding	Sand paper	220 and 400	
YANG9W	Sanding	Sand paper	1	
	Polishing	Dremel		
YAXM6X	Polishing	Rotary Tool		
	Cleaning	Acetone		
YEEVTW	Polishing	Dremel		
YKKM2U	Polishing	Dremel		
YPUZJT	Polishing	Dremel		
Z7XUQT	Polishing	Dremel		
ZAGNTK	Polishing	Dremel		
ZBBEYZ	Polishing	Dremel		
ZCP4ZQ	Visual	Stereoscope		
ZF2THE	Grinding	Sand paper	1200	

TABLE 3

Sample Preparation			
WebCode	Method	Tool Used	Grit Size
ZFJXXR	Sanding	Sand paper	Fine
ZND3RT	None		
ZWRW3P	CLEANING AND SANDING	ACETONE AND SANDPAPER	10% /360

Response Summary

Participants: 213

Sample Preparation

Visual Method: 52

Sanding Method: 46

Polishing Method: 137

None: 23

Note: The total number of preparation methods used is not equivalent to the total number of participants because some participants used more than one sample preparation method.

Recovery Methods

(listed in order of use)

TABLE 4

Recovery Methods		
WebCode	Method	Time
22GT6L	Chemical method: WAZAU and Mipro acier	
248VCU	Magnetic Particle Inspection (MPI)	
287BGC	MagnaFlux	
	Acidic Ferric Chloride	less than a minute
	Nitric Acid	less than a minute
	Fry's Reagent	less than a minute
2H3GCV	Acid Etch Method	116 Minutes
	Davis Reagent	48 Minutes
	Turner's Reagent	65 Minutes
	Fry's Reagent	3
2RR6AJ	Fry's Reagent	First attempt 22 min and 2nd attempt 21 min
2YFK3W	Acid Etch Method	total time: 60 minutes
	MagnaFlux	
3TKH6A	MagnaFlux	
	Fry's Reagent	Acidic ~ 45 minutes total
	Acidic Ferric Chloride	Acidic ~ 45 minutes total
	20% Nitric Acid	Acidic ~ 45 minutes total
	Electro-magnetic	
3W8VDT	Fry's Reagent	9x 5s, 2x 7s, 2x 10s, ~4x 1s; 1x 1s, 2x 5s, 8x 10s; 1x 10s, 1x 5s, 4x 10s; 15x 10s
44YPPG	Magnetic Particle Inspection (MPI)	
48JEAU	25% Nitric Acid	10 minutes
	Davis Reagent	10 minutes
	Turner's Reagent	10 minutes
	Fry's Reagent	10 minutes
49TNXX	Fry's Reagent	
4CBTRA	MagnaFlux	N/A
	20% Nitric Acid	10-20 minutes
	Fry's Reagent	10-20 minutes
4EFGAK	Davis Reagent	20 seconds
	Turner's Reagent	20 seconds
	Fry's Reagent	20 seconds

TABLE 4

Recovery Methods

WebCode	Method	Time
4KM32N	MagnaFlux	
4M9U6D	Fry's Reagent	approximately 180mins
4N7X6F	MagnaFlux	
	Fry's Reagent	2 minutes working
	MagnaFlux	
4QEALH	Turner's Reagent	~2 seconds per swab
	Acid Etch Method	Davis's Solution ~2 seconds per swab
	Fry's Reagent	~2 seconds per swab
	Acid Etch Method	10% Nitric Acid ~2 seconds per swab
4V6P8H	Fry's Reagent	42 minutes
63XCFU	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	1-2 minutes per application
66NHVK	MagnaFlux	
	Davis	10 minutes 3X
	MagnaFlux	
	Polish using a Dremel	
	MagnaFlux	
	Turners/Fry's	5 minutes 3X
	MagnaFlux	
6A6HHR	Magnetic Particle Inspection (MPI)	
6VYPQE	MagnaFlux	
	Acidic Ferric Chloride	10 min
	Turner's Reagent	45 min
	Fry's Reagent	30 min
6XQQMQ	Electro-acid	
	MagnaFlux	
6ZX2LE	Turner's Reagent	2 hours
7H9FGE	Fry's Reagent	15 minutes
	Turner's Reagent	15 minutes
7HUQFM	Fry's Reagent	The polished surface was treated with Fry's reagent for about 60 minutes. The process (using Fry's Reagent) was alternate repeatedly several times, till the serial number was restored completely.
7MNRFG	Electro-acid	0-30 min
7QNV9N	Acid Etch Method	Mipro

TABLE 4

Recovery Methods		
<u>WebCode</u>	<u>Method</u>	<u>Time</u>
863JXC	MagnaFlux Fry's Reagent	3-5 minutes max each application
8922TJ	Electro-magnetic	
8BMJDP	Acid Etch Method MagnaFlux	2-3 hours
8CXLYN	Magnetic Particle Inspection (MPI)	
8DDQUF	Acid Etch Method MagnaFlux	about 5-10 min
8ELXYU	Fry's Reagent	Repeated swabbing
8H8KRG	Magnetic Particle Inspection (MPI)	
8WABCL	Fry's Reagent Acidic Ferric Chloride	Acid was applied using cotton swabs.
8YWUDJ	Magnetic Particle Inspection (MPI)	
92UVQL	Acid Etch Method Acid Etch Method	2 minutes, 5 minutes 90 minutes
97QEXQ	MagnaFlux Acid Etch Method Acid Etch Method dremel with buffing wheel and jewelers compound MagnaFlux	25% HNO3 for 30 seconds at a time Davis Reagent for 30 seconds at a time 400P grit sand paper

TABLE 4

Recovery Methods		
<u>WebCode</u>	<u>Method</u>	<u>Time</u>
99FTF9	Magnetic Particle Inspection (MPI)	
	Davis	30 seconds
	Polished/Dremel	
	Fry's Reagent	30 seconds
	Fry's Reagent	30 seconds
	Davis	30 seconds
	Turner's Reagent	10 seconds
	Fry's Reagent	30 seconds
	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	30 seconds
	Davis	30 seconds
	Magnetic Particle Inspection (MPI)	
	Polished/Dremel	
	Fry's Reagent	30 seconds
	Davis	30 seconds
	Magnetic Particle Inspection (MPI)	
Davis	30 seconds	
Magnetic Particle Inspection (MPI)		
Davis	30 seconds	
Magnetic Particle Inspection (MPI)		
Davis	30 seconds	
9A8JRE	MagnaFlux	
	Magnetic Particle Inspection (MPI)	
	Turner's Reagent	< 1 min per application, total ~5 min
	Fry's Reagent	< 1 min per application, total ~10 min
9K8EL4	MagnaFlux	
	Fry's Reagent	Swipe with Q-tip
	Nitric Acid 20%	Swipe with Q-tip
9METBH	MagnaFlux	
9P34BN	Magnetic Particle Inspection (MPI)	n/a
	Acid Etch Method	~5-10 swipes with cotton swab, immediately followed by acetone rinse
	Fry's Reagent	~5-10 swipes with cotton swab, immediately followed by acetone rinse
9QWUEG	Acid Etch Method	approx. 15 min.
9T2KE6	MagnaFlux	

TABLE 4

Recovery Methods

WebCode	Method	Time
9Z3UUB	MagnaFlux	
	Fry's Reagent	2 minutes
	Acidic Ferric Chloride	30 seconds (highlighter)
	MagnaFlux	
A433XK	Fry's Reagent	1 minute
	MagnaFlux	
A6AH6Q	Fry's Reagent	10 min
A847P8	MagnaFlux	
A8ZNLG	Davis Reagent	
	Turner's Reagent	
	Fry's Reagent	
	MagnaFlux	
AGQAQF	Acid Etch (Nitric Acid Solution 10% to 40% and Modified Fry's Solution)	Two minutes alternatively
AHVYR3	MagnaFlux	
	Fry's Reagent	Several seconds
	20% Nitric Acid	Several seconds
AUR2CK	Fry's Reagent	2 hours
AWJZQH	MagnaFlux	
AY6QU9	Magnetic Particle Inspection (MPI)	
	Polish	
	Magnetic Particle Inspection (MPI)	
	Davis Reagent	30 seconds
	Fry's Reagent	30 seconds
	Davis Reagent	45 seconds
	Magnetic Particle Inspection (MPI)	
	Davis Reagent	30 seconds
	Magnetic Particle Inspection (MPI)	
Turner's Reagent	15 seconds	

TABLE 4

Recovery Methods		
WebCode	Method	Time
B4FERA	Davis Reagent	1 min
	Davis Reagent	2 min
	Davis Reagent	5 min
	Turner's Reagent	1 min
	Turner's Reagent	2 min
	Turner's Reagent	2 min
	Turner's Reagent	5 min
	Fry's Reagent	1 min
	Fry's Reagent	1 min
	Turner's Reagent	5 min
	Fry's Reagent	1 min
	Turner's Reagent	5 min
	Turner's Reagent	5 min
	Turner's Reagent	5 min
	Turner's Reagent	10 min
	Fry's Reagent	1 min
	Fry's Reagent	1 min
Fry's Reagent	1 min	
MagnaFlux		
B7YBDE	Acid Etch Method	15 - 20 min.
BBXKNG	Fry's Reagent	rubbed with swab and wiped
	Acidic Ferric Chloride	rubbed with swab and wiped
	25% Nitric Acid	rubbed with swab and wiped
	MagnaFlux	30 seconds
BGZUUA	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	30 minutes total
BHVG8D	MagnaFlux	
BQMVB	Acidic Ferric Chloride	1h15
BVFWAC	MagnaFlux	
BVHLJF	Fry's Reagent	30 seconds to 2 minutes
	Acid Etch Method	30 seconds to 2 minutes
BYF87C	Davis	left on for 1 second and wiped off with q-tip
	Turner's Reagent	left on for 1 second and wiped off with q-tip
	Fry's Reagent	left on for 1 second and wiped off with q-tip

TABLE 4

Recovery Methods		
WebCode	Method	Time
C7FR42	MagnaFlux	n/a
	Acidic Ferric Chloride	few minutes
	Acid Etch Method	20% nitric few minutes
	Fry's Reagent	few minutes
	oil	after restoration applied
CBPZDJ	Magnetic Particle Inspection (MPI)	
	Turner's Reagent	2 seconds
	Fry's Reagent	2 seconds
CDDCCN	Magnetic Particle Inspection (MPI)	n/a
CQ7XHJ	Magnetic Particle Inspection (MPI)	
CQKKU7	Fry's Reagent	10 min total several applications made
	MagnaFlux	5 rounds of polishing and applying MagnaFlux
CU6AEJ	Magnetic Particle Inspection (MPI)	
	Acid Etch Method	10 seconds
D2JHFL	MagnaFlux	
	Fry's Reagent	a few minutes
	Acid Etch Method	a few minutes
D9ZX6A	MagnaFlux	no aplica
DJYRFL	Magnetic Particle Inspection (MPI)	
DL6C78	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	20 minutes
DLPXWC	REAGENT FRAY	1 HOUS 20 MINUTES
DMX3CL	MagnaFlux	n/a
DVEJ3B	Davis Reagent	35 Minutes
	Turner's Reagent	30 Minutes
	MagnaFlux	10 Minutes
E2X4PM	Turner's Reagent	1 minute
	Fry's Reagent	4 minutes
E4K68F	Fry's Reagent	5 minutes
	Magnetic Particle Inspection (MPI)	

TABLE 4

Recovery Methods		
WebCode	Method	Time
E79G7L	Magnetic Particle Inspection (MPI)	
	Turner's Reagent	Swabbed area for about 10 minutes
	Fry's Reagent	Swabbed area for about 10 minutes
	Nitric Acid	Swabbed area for about 3 minutes
	Magnetic Particle Inspection (MPI)	
ECRLX2	Acid Etch Method	5-10 minutes
ED4GG8	Turner's Reagent	10 SECONDS
	Fry's Reagent	10 SECONDS
EEJKBY	MagnaFlux	
	Fry's Reagent	multiple swabs, a few minutes
	Acetic Acid (20%)	multiple swabs, a few minutes
EMVUKD	Fry's Reagent	swabbed with reagent
	Polisher	
EQXTV7	MagnaFlux	
	Fry's Reagent	total ~5 minutes
ERQTTG	Davis Reagent	15 Min
	Turner's Reagent	15 min
	Fry's Reagent	30 min
ETHPHB	FRAY REAGENT	1 HOUS 20 MINUTES
EVP376	MagnaFlux	
F9UHPE	Turner's Reagent	swabbing, alternating Davis', Turner's, 10% Nitric Acid for a few seconds at a time
	Dremel	20 seconds
	Turner's Reagent	swabbing, alternating Turner's, Fry's, 10% Nitric Acid for a few seconds at a time
	Dremel	20 seconds
	Fry's Reagent	swabbing, alternating Fry's, Etching Solution#2, 10% Nitric Acid for a few seconds at a time
	Acid Etch Method	swabbing, alternating Etching Solution#2, Ferric Chloride, 10% Nitric Acid for a few seconds at a time
	Acid Etch Method	swabbing, alternating Etching Solution#2, 10% Nitric Acid for a few seconds at a time over a period of 30 minutes

TABLE 4

Recovery Methods		
WebCode	Method	Time
FHD22X	MagnaFlux	1 minute
	Davis' Reagent	3 minutes
	Turner's Reagent	5 minutes
	Fry's Reagent	5 minutes
	25% Nitric Acid	1 minute
	MagnaFlux	1 minute
FURY73	MagnaFlux	
	Davis	Varied
	Turner's Reagent	Varied
	Fry's Reagent	Varied
	MagnaFlux	
	Turner's and Fry's	Varied
	Davis and 25% Nitric	Varied
	Turner's and Fry's	Varied
	MagnaFlux	
	Turner's and Fry's	Varied
	MagnaFlux	
FY4XL2	Fry's Reagent	60 min
G3XBJB	Fry's Reagent	3 Hours
	Acid Etch Method	6 Hours
G7GDMA	MagnaFlux	
GF8QQF	MagnaFlux	
GHXX87	Turner's Reagent	Varied: 30 seconds, 1 minute, to 5 minutes
	Fry's Reagent	Varied: 30 seconds, 1 minute, to 5 minutes
	Turner's Reagent	Varied: 30 seconds, 1 minute, to 5 minutes
GQTVZ2	Magnetic Particle Inspection (MPI)	
	Turner's Reagent	total of 15 mins
	Magnetic Particle Inspection (MPI)	
GWC4H7	Fry's Reagent	Short periods of chemical application and removal across an approximate 4 hour period.
GXQPR8	Electro-magnetic	

TABLE 4

Recovery Methods

WebCode	Method	Time
H92L8V	MagnaFlux	
	Fry's Reagent	multiple swipe, various times (seconds)
HE6KK7	MagnaFlux	
HJMQUEV	Fry's Reagent	one minute
	Acidic Ferric Chloride	one minute
	Nitric Acid	one minutes
	MagnaFlux	five minutes
HXJ3MY	Fry's Reagent	6 applications, ~5 minutes each
HZA7KC	MagnaFlux	
	Fry's Reagent	Less than a minute.
JCWR4C	Davi's Reagent	30 minutes
	Turner's Reagent	30 minutes
	Fry's Reagent	120 minutes
JKRTMB	Fry's Reagent	max. 10 minutes
	Acid Etch Method	max. 10 minutes
JT7EVF	Fry's Reagent	1 minute
	MagnaFlux	3 minutes
	Acidic Ferric Chloride	2 minutes
	25% Nitric Acid	2 minutes
	Distilled water - neutralizing agent	3 minutes
JT8C7B	Turner's Reagent	Short increments over a long period of time
	Fry's Reagent	Short increments over a long period of time
	Davis' Reagent	Short increments over a long period of time
	25% Nitric Acid	Short increments over a long period of time
JVXBKA	MagnaFlux	

TABLE 4

Recovery Methods		
WebCode	Method	Time
K2UPK2	MagnaFlux	(prior to and after polishing)
	Fry's Reagent	20 minutes
	Turner's Reagent	5 minutes
	Davis	5 minutes
	Fry's Reagent	15 minutes
	Griffin Reagent	5 minutes
	MagnaFlux	
	Griffin Reagent	20 minutes
	Fry's Reagent	90 minutes
	MagnaFlux	
	Nitric acid	10 minutes
	Griffin Reagent	10 minutes
MagnaFlux		
K4LQHC	Acid Etch Method	45 minutes
KA9F68	Electro-magnetic	
KDAN7W	Sirchie Restor-A-Gel Steel	Approximately 15 minutes
KG9Z3W	Acid Etch Method	6 hours
KJEFHE	Fry's Reagent	15 second increments - multiple applications
	Turner's Reagent	15 second increments - multiple applications
	Davis	15 second increments - multiple applications
KLZACU	MagnaFlux	used prior to polishing
	Polishing	
	Fry's Reagent	multiple times 15 to 30 seconds each time
	Acidic Ferric Chloride	multiple times 15 to 30 seconds each time
	Acid Etch Method	multiple times 15 to 30 seconds each time
MagnaFlux	used after chemical processes	
KTK7H6	Magnetic Particle Inspection (MPI)	
KYRWKB	Fry's Reagent	more than 1 hour
L2EQ2C	25% Nitric Acid	Applied and removed
	Davis' Reagent	Applied and removed
	Turner's Reagent	Applied and removed
	Fry's Reagent	Applied and removed

TABLE 4

Recovery Methods		
WebCode	Method	Time
L42A3A	MagnaFlux	
LFAAHY	MagnaFlux	
	Fry's Reagent	2 hours
	25% Nitric Acid	less than a minute
LG4ZNE	MagnaFlux	N/A
	Fry's Reagent	Approximately 15 minutes off and on
	MagnaFlux	N/A
LKPH7Y	MagnaFlux	N/A
LKPMG2	Fry's Reagent	< 30 mins
	Turner's Reagent	< 30 mins
LPGPN8	MagnaFlux	
M4ZUBU	Villela's solution	5 hours
MEXULD	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	Swiped repeatedly for approx. 1 min.
	Magnetic Particle Inspection (MPI)	
MFPQB8	Davis	the reagent was applied with a swab - swiping the surface (10seconds - 30seconds)
	Turner's Reagent	the reagent was applied with a swab - swiping the surface (10seconds - 30seconds)
	Fry's Reagent	the reagent was applied with a swab - swiping the surface (10seconds - 30seconds)
	Repeated this order after polishing again	
MJNA9Y	Fry's Reagent	85 minutes first total, then left for a total of 11.5 hours
MQL2E8	MagnaFlux	N/A
	Turner's Reagent	no longer than 20-30 seconds
	Acidic Ferric Chloride	no longer than 20-30 seconds
MWYHDC	Acid Etch Method	Numerous swabs used, acid was added, gone over with the swabs and then added again
	MagnaFlux	
N7GNGT	Magnetic Particle Inspection (MPI)	N/A
	Fry's Reagent	Approx. twenty to thirty minutes.

TABLE 4

Recovery Methods		
WebCode	Method	Time
N8AETZ	Fry's Reagent	nearly 4 hours
	Reagent by Heyn	nearly 4 hours
	Reagent Nital 20%	nearly 8 hours
N9HNGQ	Fry's Reagent	60 minutes
NHBYT8	Acid Etch Method	20 minute
NMGTM3	Electro-magnetic	
NU6FH9	Turner's Reagent	5 minutes
	Fry's Reagent	30 minutes
	Davis Reagent	2 minutes
NVX9DQ	Fry's Reagent	8 minutes total
NZLNJP	Acid Etch Method	6 HRS
P47YY3	25% Nitric Acid	
	Acidic Ferric Chloride	
	Fry's Reagent	50% Diluted
	MagnaFlux	
P63GXX	Magnetic Particle Inspection (MPI)	
	Griffin Reagent	Up to approx 25 min
P93MFA	Fry's Reagent	10 min
	MagnaFlux	
PFHLNU	Fry's Reagent	
	Acidic Ferric Chloride	20-30 SECONDS
PLQM8C	Fry's Reagent	30-45 seconds per application, 6 applications total.
PQG4J3	Electro-magnetic	
QA8UW8	Fry's Reagent	2-3 min
	Acidic Ferric Chloride	2-3 min
	25% Nitric Acid	2-3 min
	MagnaFlux	
QCYQK2	MagnaFlux	
QD77R8	Fry's Reagent	10 minutes
	Acidic Ferric Chloride	1 minute
	Fry's Reagent	5 minutes
	Acidic Ferric Chloride	1 minute
QEKGNR	Acid Etch Method	N/A

TABLE 4

Recovery Methods		
WebCode	Method	Time
QFX2G2	Fry's Reagent	Alternated swabs of Fry's & Nitric Acid during restoration which lasted ~ 2.5 hours
	Acidic Ferric Chloride	Few swabs applied for ~ 15 minutes
	25% Nitric Acid	Alternated swabs of Fry's & Nitric Acid during restoration which lasted ~ 2.5 hours
QKAWG6	MagnaFlux	
	Acid Etch Method	1 minute
QWKMVZ	Electro-magnetic	
QY9YU7	Davis Reagent	2 min.
	Turner's Reagent	5 min.
	Fry's Reagent	30 min.
QZ2UJZ	REAGENT FRAY	55 MINUTES
R2VZCY	Magnetic Particle Inspection (MPI)	
	Davis Reagent	1-3 Seconds at a time
	Turner's Reagent	1-3 Seconds at a time
R3ZPDM	MagnaFlux	
	Acidic Ferric Chloride	1 minute
	20% Nitric Acid	1 minute
R9TPU3	Turner's Reagent	5 minute continuous applications, let sit ~20 minutes periodically
	Fry's Reagent	5 minute continuous applications, let sit ~20 minutes periodically
	MagnaFlux	
REWQX4	Acid Etch Method	30-45 SECOND INTERVALS
	Magnetic Particle Inspection (MPI)	
RGK3XA	MagnaFlux	
	Fry's Reagent	30 min.
	Acid Etch Method	Acidic Cupric Sulfate (5 min.)
RX9FB2	Magnetic Particle Inspection (MPI)	10 minutes
	Acid Etch Method	
T6BMQ4	25% Nitric Acid	30 second intervals
	Davis Reagent	30 second intervals
	Turner's Reagent	30 second intervals
	Fry's Reagent	30 second intervals

TABLE 4

Recovery Methods		
WebCode	Method	Time
T76DUX	Fry's Reagent	3-5 minutes
	25% Nitric Acid Solution	3-5 minutes
T7ZZ9M	MagnaFlux	
	Fry's Reagent	30 seconds intermittently
	20 Nitric Acid	30 seconds intermittently
T8VUQR	MagnaFlux	
	Turner's Reagent	~30-60 seconds
	Fry's Reagent	~30-60 seconds
	MagnaFlux	
	Fry's Reagent	~30-60 seconds
T9PKW7	25% Nitric Acid	30 seconds
	MagnaFlux	
	Davis reagent	30 seconds
	Turner's Reagent	30 seconds
	MagnaFlux	
	Fry's Reagent	30 seconds
TK3KRY	MagnaFlux	
TMQWR6	Fry's Reagent	Cotton tip swabbing with acids for approx 1 hour
	Davies Reagent	see above
	Phosphoric/Nitric Acid	
	MagnaFlux	Sprayed on surface and used a magnet
TPDXAX	Acid Etch Method	minutes
	Fry's Reagent	minutes
TPURB8	Magnetic Particle Inspection (MPI)	
	Turner's Reagent	5 minutes
	Fry's Reagent	30 minutes (with swiping and additional polishing)
TRKXQX	Electro-magnetic	minutes
	MagnaFlux	minutes
	Acid Etch Method	minutes
TZFVH8	Fry's Reagent	Various
	25% HNO3	Various

TABLE 4

Recovery Methods		
WebCode	Method	Time
U729WZ	Fry's Reagent	short increments over a long period of time
	25% Nitric Acid	short increments over a long period of time
UBRMG2	MagnaFlux	
	Fry's Reagent	
UEAYZ4	Acid Etch Method	25% Nitric Acid
	Fry's Reagent	
	MagnaFlux	
UF3VNW	MagnaFlux	
UFKR9J	MagnaFlux	
	Fry's Reagent	applied over a few minutes time
	20% Nitric Acid solution	applied over a few minutes time
	MagnaFlux	
UHNMRM	Fry's Reagent	10 SECONDS
	Acidic Ferric Chloride	10 SECONDS
	MagnaFlux	
UHURB7	MagnaFlux	
UKU6QH	Fry's Reagent	rolling method, made passes across area
	20% Nitric Acid	rolling method, made passes across area
	MagnaFlux	
VFJ9NU	REAGENT FRAY	1 HOUR
VDXJQ	Fry's Reagent	Various. Few seconds to 10 minutes
VW38PL	Phosporic/Nitric Acid & Dilute Nitric Acid	
W7983T	REAGENT FRAY	2 HOUR
W9EW3G	Fry's Reagent	15-30 second increments (alternating between Fry's and Nitric Acid)
	Acid Etch Method	15-30 second increments (alternating between Fry's and Nitric Acid)
WAPUFY	Fry's Reagent	1 minute
	Magnetic Particle Inspection (MPI)	
WCFTUW	Fry's Reagent	20 minutes

TABLE 4

Recovery Methods		
WebCode	Method	Time
WH3MRU	Davis Reagent	5 minutes
	Turner's Reagent	15 minutes
	Fry's Reagent	15 minutes
	MagnaFlux	5 minutes
WJFFLW	Fry's Reagent	~ 20 seconds per application
	20% Nitric Acid	~ 20 seconds per application
	MagnaFlux	
X7KLPT	Acid Etch Method	minutes
	Acidic Ferric Chloride	minutes
	Fry's Reagent	minutes
XD89JY	Magnetic Particle Inspection (MPI)	
	Acid Etch Method	~ several seconds
XEXAPM	MagnaFlux	
XEXEZP	Fry's Reagent	
	MagnaFlux	
XGQBMX	Acid Etch Method	1 hour
XK3DDZ	MagnaFlux	
	Fry's Reagent	30 seconds 4x
XMRKTQ	Fry's Reagent	5 minutes
	Nitric Acid	3 minutes
XTH26G	Acid Etch Method	~ 1.5 to 2 hours
XY4UGF	MagnaFlux	
Y36D2U	Acidic Ferric Chloride	5-60 seconds
	Phosphoric/Nitric Acid	5-60 seconds
YANG9W	Fry's Reagent	1-2 minutes at a time, several times
YAXM6X	Fry's Reagent	30 minutes
	Acidic Ferric Chloride	30 minutes
	Acid Etch Method	30 minutes
	Fry's Reagent	30 minutes
YEEVTW	MagnaFlux	
	Fry's Reagent	5 minutes
YKKM2U	MagnaFlux	
	Fry's Reagent	swabbed with cotton swab
	20% Nitric Acid	swabbed with cotton swab

TABLE 4

Recovery Methods		
WebCode	Method	Time
YPUZJT	Davis' Reagent	10 minutes
	Turner's Reagent	10 minutes
	Fry's Reagent	90 minutes
	Magnetic Particle Inspection (MPI)	
Z7XUQT	MagnaFlux	
	Acidic Ferric Chloride	swiped with cotton swabs
	20% Nitric Acid	swiped with cotton swabs
	Fry's Reagent	swiped with cotton swabs
ZAGNTK	Turner's Reagent	~ 10 Minutes
	Fry's Reagent	~ 10 Minutes
	MagnaFlux	
ZBBEYZ	MagnaFlux	
	Davis Reagent	15 minutes
	Turner's Reagent	15 minutes
	Fry's Reagent	15 minutes
ZCP4ZQ	MagnaFlux	
	Magnetic Particle Inspection (MPI)	
	Fry's Reagent	5 min
	MagnaFlux	
ZFJXXR	MagnaFlux	15 minutes
	Fry's Reagent	5 minutes
	Nitric Acid	5minutes
ZND3RT	MagnaFlux	
	Fry's Reagent	~5-10 minutes
ZWRW3P	REAGENT FRAY	1 HOUS

Response Summary		Participants: 212
Recovery Methods		
Chemical Processing:	166	
Magnetic Processing:	128	
<p>Note: The total number of recovery methods used is not equivalent to the total number of participants because some participants used more than one recovery method.</p>		

Additional Comments

TABLE 5

WebCode	Additional Comments
2RR6AJ	Method 1 Version 3 (Fry's Reagent) used. Had 2 x attempts - on first attempt had H_K_4E developed. 2nd attempt H5KF4E. The metal taken back to polished surface between each attempt. 2nd attempt used automotive cut police as the final polish for the metal
2YFK3W	Historically over the past several years, our Lab system has received at least four serial number restoration PT that all the defaced / questioned characters could not be restored or could not be accurately determined. We received three separate 20-5251 PT, distributed to three individual examiners. Two of the tests - all defaced characters could not be restored or observed. One of the tests - all defaced characters were restored and observed. Using the same procedures, techniques, Magnaflux and chemical etching
3TKH6A	Acid, Magnaflux, and Electro-Magnet were used alternately throughout the restoration. Total time restoring using acidic chemicals was approximately 45 minutes total. Magnaflux was used prior to polishing to ascertain location and orientation of obliterated characters
48JEAU	Each chemical was left on the metal for 10 minutes before using a cotton swab to swipe in one direction to apply the chemical to the metal. The following chemicals were used: 25% Nitric Acid - 14 times, Davis Reagent - 14 times, Turner's Reagent - 13 times, Fry's Reagent - 13 times
4M9U6D	The outer characters were able to be restored very quickly and were very well defined. The central characters were much fainter and took longer to restore. In relation to the fourth and fifth characters not being reported formally, this could be due to the stamping being shallower than the other characters originally before being obliterated.
4V6P8H	The area of interest was polished using a rubber wheel, prior to the application of Fry's Reagent. Fry's reagent was applied continuously whilst being kept under observation to detect any changes.
6XQQMQ	I managed to restore the first letter using electrochemical etching. Despite extensive etching I could not restore any more characters this way. Using Magnaflux Magnetic Particle Inspection equipment I could read the first and the last two characters. I could also see the faint outline of the rest of the characters but not good enough to identify them.
7H9FGE	The second character was difficult in obtaining.
7MNRFG	Our equipment (electric aggregate) is very old. This test was much more difficult than the previous one's we have done
863JXC	The 2nd and 5th characters were much more difficult to visualize than the other four characters.
92UVQL	We are interested in the specific sample alloy used. Restoring the serial number from this sample alloy was more difficult than restoring serial numbers from weapon parts.

TABLE 5

WebCode	Additional Comments
97QEXQ	Initial use of magnaflux revealed most of the serial number (the H and the 4 did not fully develop). With continued manipulation of magnets, the serial number could have been completely restored with magnaflux. The chemicals (25% HNO ₃ and Davis Reagent) used were swabbed on for 30 seconds at a time and then cleaned off. 25% HNO ₃ was particularly effective and restored the first and last character. However, it did not completely restore the serial number. 440P grit sand paper and a dremel with a buffing wheel and jewelers' compound was used. These finishing techniques prepared the characters to be better observed with the use of magnaflux. The final use of magnaflux restored fully all obliterated characters.
9Z3UUB	The acidic ferric chloride was used to highlight the characters revealed by the Fry's regent.
A8ZNLG	Chemicals were applied over a period of an hour. I then moved to Magnetic Particle Inspection to see if I could enhance my characters, which I was able to do so. This process was an additional 30 minutes.
AGQAQF	Number before examination was invisible. Number was found to be grinded.
BQMVB	Can you explain how sample are stamped ? Is that the characters are struck manually with punches or is it an automatic machine that strikes them? How are the plates milled ? (one at a time ?)
BYF87C	Photos were taken during the process to document what was seen.
CQKKU7	As stated in my results I could not resolve the last character. It is either an E (when Fry's is applied) or a K (when MagnaFlux employed). I was not comfortable in choosing one over the other as each is equally compelling.
D9ZX6A	The procedure was carried out in compliance with the parameters established in the guide for the analysis and restoration of serial numbers, erased or altered [Document Number] and in accordance with the magnetic method, obtaining the indicated results.
DL6C78	Number was mostly recovered using MPI and Fry's was used as a precaution to clarify one character.
DLPXWC	FRAY REAGENT WAS USED, WHICH IS SUITABLE FOR THE TYPE OF METAL.
E79G7L	The numbers were not stamped in the middle of the milled area, so the last character was right on the edge of the milled area.
ECRLX2	The visual examination of the item revealed the presence of filing marks on the centre of the bar.
EMVUKD	Due to the metal removed, unable to restore full serial number. The digits that came up were very difficult to view. It appeared to be more of a shadow of a digit. The metal bar stock began to oxidize and change color (copper color).
ERQTTG	After the restoration process, sodium bicarbonate was used to neutralize acid residues on the surface.
ETHPHB	MANGAFLUX WAS NOT USED BECAUSE THIS RESOURCE IS NOT CURRENTLY AVAILABLE.
FURY73	No characters were visible with chemical processing during the etching process. Results based on Magnaflux.

TABLE 5

WebCode	Additional Comments
GWC4H7	The removal of the characters by a milling/similar process, left significant arced striae that made interpretation of restored characters problematic.
H92L8V	Magnaflux performed before and after chemical method with polishing before and after first magnaflux, during chemical application and before second round of magnaflux. 20% nitric acid used in addition to Fry's reagent during chemical application
JT8C7B	This serial number restoration was very difficult. The restoration process took numerous hours and multiple days. The characters H and E were very protruding throughout the process; however, the remaining four characters would disappear as quick as they appear. All of our reagents were QC'd prior to this examination and worked as they should.
K2UPK2	The metal was very resistant to all of the chemical restoration techniques I applied to it (more so than steel commonly used in firearm manufacturing), but the obliterated characters were readily revealed using MagnaFlux (both prior to and after chemical processing).
KLZACU	alternated different chemical applications mentioned multiple times.
L2EQ2C	Applied chemicals in order listed one time through and on the second time used this order: 25% Nitric Acid, and Davis' Reagent.
L42A3A	The CTS exam on suspected obliterated serial number was given for evaluation. The 4140 alloy steel was observed visually and then the sanding was done. The Non - Destructive method was used for the recovery of the serial number. The reagent used was Magnaflux. The steel bar was put on the magnet and by adding small amounts of magnaflux liquid, some of the numbers were observed. By repeating the process two to three times the Suspected number was seen more clear, which came out to be H5KF4E
LG4ZNE	The Aluminum Standard that we were sent does not appear to have the style of characters as the Steel bar stock serial number that was obliterated. The cutting and grinding method used to obliterate the serial number made this serial number restoration difficult.
N8AETZ	no preparing by sanding or polishing first, because in case of "no result" we couldt prepare further everytime
N9HNGQ	Re-polished three (3) times during chemical restoration.
NHBYT8	The original number was restored and read as H5KF4E
NMGTM3	A good positive result was obtained during the first attempt and therefore only the electromagnetic process was applied.
QFX2G2	The second and fifth characters were not visible enough to determine partial or possible characters. The fourth and sixth characters were partially visible, but could not be distinguished between E and F since the bottom of the characters could not clearly be observed.
QZ2UJZ	Mangaflux was not used because that resource is not currently available.
R3ZPDM	Chemicals were only used to further enhance hard to read characters. All restoration was primarily done by alternating between Polishing and Magnaflux.
TPDXAX	1st acid etch method is 25% nitric acid. (20) swabs of 25% nitric acid used. (20) swabs of Fry's reagent used

TABLE 5

WebCode	Additional Comments
TRKXQX	Methods: Serial Number Magnetic, thermal, and chemical methods may be used for the restoration of serial numbers. Conclusions regarding restored characters are made by visual examination of the restored surface under a variety of lighting conditions. Information regarding the alpha-numeric structure or the general location of serial numbers is obtained when necessary from reference sources or from firearms in the Laboratory's Reference Firearms Collection. Limitations: Serial Number 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.
TZFVH8	The steel bar stock appears to be different that previous tests taken by this examiner. It now reacts to a magnet (where previously it did not) and was noticed to have a shinier luster than previously seen. Additionally, during chemical restoration it was noticed the grain structure of the metal reacted to the etchant and interfered with observation of the restored characters. Compared to the non-magnetic, high chromium content steel bar stock previously used, it took longer for characters to be restored and a full restoration was not achieved.
U729WZ	This serial number restoration was extremely difficult compared to the ones I have done in the past years. This restoration took a couple of hours to do when normally it would take less than thirty minutes with a very clear restored serial number. During this restoration, two of the characters (H and E) were prominent throughout the entire restoration; however, the other four characters would disappear as quickly as they would appear. I was sent a replacement bar stock and had the same results as the first. The bar stock seems to be harder in nature and maybe the characters were not stamped hard enough. All of our reagents were QC'd prior to this examination and worked as they should.
VFJ9NU	MANGAFLUX WAS NOT USED BECAUSE THIS RESOURCE IS NOT CURRENTLY AVAILABLE
WDXJQ	area sanded to a mirror finished, characters started to appear after about 10minutes of application of Fry's Reagent.
W7983T	Mangaflux was not used because that resource is not currently available.
WCFTUW	Used an emery stick and polished by hand
WJFFLW	Used acetone to help clean the plate during restoration techniques. Applied Remington Oil upon completion of the restoration
X7KLPT	1st acid etch method was 25% nitric acid. Used around 80 swabs on the test between the three acids and only one character out of six was recovered. This seems to be a bad test and makes me wonder if there were issues with the stamping of the number, the way the number was obliterated or the type of metal used.
YEEVTW	The final letter of the serial number was less clear, however appeared to be an E, rather than an F.
ZWRW3P	Mangaflux was not used because this resource is not currently available. That is why chemical tempering was used.

-End of Report-
(Appendix may follow)

Collaborative Testing Services ~ Forensic Testing Program

Test No. 20-5251: Serial Number Restoration

DATA MUST BE SUBMITTED BY **Sept. 14, 2020, 11:59 p.m.** TO BE INCLUDED IN THE REPORT

Participant Code: U1234E

WebCode: 7LU2A3

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

Please Note: A piece of aluminum bar stock labeled as 'Aluminum Standard' was also included in the sample set and is intended as a reference for size, shape and positioning of the stamped alphanumeric characters used in the serial number. Use caution when handling the sample, as there may be sharp areas on the Item 1 bar stock.

Items Submitted (Sample Pack SNR2):

Item 1: A piece of 4140 alloy steel bar stock with suspected obliterated serial number.

1.) Please record the restored characters below.

The serial number on this material consists of 6 characters.

Item 1:

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

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

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

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

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

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

eg. Fry's, Acid Etch, MagnaFlux, etc. (Please list in order of use)

Method	If an acidic method was used how long was the acid left on the material?
<input type="text"/>	<input type="text"/>

5.) Additional Comments

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

Optional Question

1: Instead of receiving the physical aluminum standard, would a high resolution image of the aluminum standard that is accessible through the CTS Portal be adequate?

RELEASE OF DATA TO ACCREDITATION BODIES

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

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

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

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

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

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

A2LA Certificate No.

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

Authorized Contact Person and Title

Laboratory Name

Location (City/State)