



Serial Number Restoration Test No. 10-525 Summary Report

This test was sent to 203 participants. Each participant received a sample pack containing a piece of stainless steel barstock which had been stamped with a six digit serial number which was then obliterated. Also included was a piece of aluminum bar stock to provide an example of the number shape and positioning of the original serial number. Participants were asked to attempt to restore the obliterated serial number. Data were returned from 177 participants (87% response rate) 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 barstock that contained an obliterated serial number (Item 1) and a piece of aluminum barstock. 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 digits (960156).

SAMPLE PREPARATION-

Each sample set contained a piece of 1" x 1/4" x 3" 304 stainless steel barstock that was stamped using a punch press. The stamp consisted of 6 digits (960156) that are 1/8" in height. The serial number was then obliterated by removing material from the barstock using a vertical milling machine. A consistent amount of material was removed from each piece of barstock.

A piece of aluminum barstock was also included in the sample set to provide an example of the shape and size of the stamped digits as well as the positioning of the original serial number.

SAMPLE PACK ASSEMBLY: An Item 1 and aluminum standard were wrapped with chip board and placed in their respective prelabeled envelopes. Each sample pack was packaged with 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 further sealed with a piece of evidence tape and initialed with "CTS".

VERIFICATION-

Predistribution laboratories recovered the obliterated 6 digit serial number and reported "9 6 0 1 5 6".

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 barstock that contained an obliterated serial number (Item 1) and a piece of aluminum barstock. 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 digits (960156). [Refer to Manufacturer's Information for production details.]

Of the 177 responding participants, 171 (97%) recovered the six digits consistent with the Manufacturer's Information. Two of these did not report their response in Table 1; however, did report the six digit serial number in their Conclusions. Four of the 177 participants recovered five of the six digits. One participant had a partial restoration and reported the number "6" as the fourth digit instead of the number "1" as indicated in the Manufacturer's Information. The last participant responded Inconclusive.

Recovered Digits

Please indicate the recovered digits below.

TABLE 1

WebCode	Digit1	Digit2	Digit3	Digit4	Digit5	Digit6
2292KL	9	6	0	1	5	6
2D2LZC	9	6	0	1	5	6
2DW7LQ	9	6	0	1	5	6
2QR6TW	9	6	0	1	5	6
2T8WFJ	9	6	0	1	5	6
2WVB7E	9	6	0	1	5	6
2XQMAU	9	8	0	1	5	6
397ZY2	9	6	0	1	5	6
3LXGWF	9	6	0	1	5	6
4LCCRM	9	6	0	1	5	6
4VB7PR	9	6	0	1	5	6
4WVXJU	9	6	0	1	5	6
687UFD	9	6	0	1	5	6
6NM2BG	9	6	0	1	5	6
6P2C82	9	6	0	1	5	6
6RAF3C	9	6	0	1	5	6
6TZJTY	9	6	0	1	5	6
78PWMD	9	6	0	1	5	6
79UQ2K	9	6	0	1	5	6
7BG6TF	9	6	0	1	5	6
7FBB3B	9	6	0	1	5	6
7LZLKL	9	6	0	1	5	6
7QRVM8	9	6	0	1	5	6
88ZY9C	9	6	0	1	5	6
8B9RHN	9	6	0	1	5	6

TABLE 1

WebCode	<u>Digit1</u>	<u>Digit2</u>	<u>Digit3</u>	<u>Digit4</u>	<u>Digit5</u>	<u>Digit6</u>
8HQXEV	9	6	0	1	5	6
8J6H86	9	6	0	1	5	6
8KZAUC	9	6	0	1	5	6
8MMPK8	9	6	0	1	5	0
8NZADG	9	6	0	1	5	6
8WVE7H	9	6	0	1	5	6
9HQFVQ	9	6	0	1	5	6
9HTX33	9	6	0	1	5	6
9QM4V4	9	6	0	1	5	6
A72KQC	9	6	0	1	5	6
ABK4BD	9	6	0	1	5	6
AGBFC2	9	6	0	1	5	6
AHAMRZ	9	6	0	1	5	6
AKXV3W	9	6	0	1	5	6
B6BAUM	9	6	0	1	3/5*	6
B7C4NE	9	6	0	1	5	6
B88LPF	9	6	0	1	5	6
BAAJ4P	9	6	0	1	5	6
BEJU6V	9	6	0	1	5	6
BFUJK2	9	6	0	1	5	6
BPMVT2	9	6	0	1	5	6
BQGGLT	9	6	0	1	5	6
BXHXUD	9	6	0	1	5	6
C367JC	9	6	0	1	5	6
C9E4NC	9	6	0	1	5	6
C9TLCP	9	6	0	1	5	6
CYGR TG	9	6	0	1	5	6

TABLE 1

WebCode	<u>Digit1</u>	<u>Digit2</u>	<u>Digit3</u>	<u>Digit4</u>	<u>Digit5</u>	<u>Digit6</u>
D33V3Y	9	6	0	1	5	6
D4A7Y3	9	6	0	1	5	6
D6PBTU	9	6	0	1	5	6
D7ZAPP	9	6	0	1	5	6
DP223C	9	6	0	1	5	6
DWUD2L	9	6	0	1	5	6
E36M62	9	6	0	1	5	6
EAGW29	9	6	0	1	5	6
EEQ9ZU	9	6	0	1	5	6
ENYQMY	9	6	0	1	5	6
EU2YUM	9	6	0	1	5	6
EVEDHW	9	6	0	1	5	6
EXNDLH	9	6	0	1	5	6
EXZDHC	9	6	0	1	5	6
F2FZUW	9	6	0	1	5	6
F3XVQQ	9	6	0	1	5	6
FKZP73	9	6	0	1	5	6
FNDFAJ	9	6	0	1	5	6
FRB2Y2	9	6	0	1	5	6
FRY684	9	6	0	1	5	6
FTA43C	9	6	0	1	5	6
GGMP2U	9	6	0	1	5	6
GVALRR	9	6	0	1	5	6
H3WMW8	9	6	0	1	5	6
H7BENP	9	6	0	1	5	6
HALTTG	9	6	0	1	5	6
HC98JC	9	6	0	1	5	6

TABLE 1

WebCode	<u>Digit1</u>	<u>Digit2</u>	<u>Digit3</u>	<u>Digit4</u>	<u>Digit5</u>	<u>Digit6</u>
HLG2FQ	9	6	0	1	5	6
HMQNCJ	9	6	0	1	5	6
HXKR2Z	9	6	0	1	5	6
J7YD3L	-	-	-	-	-	-
J9VQZZ	9	6	0	1	5	6
JK2TBW	9	6	0	1	5	6
JLKPR3	9	6	0	1	5	6
JRHHMP	9	6	0	1	5	6
JTEVK4	9	6	0	1	5	6
K2TUZZ	9	6	0	1	5	6
K6B942	9	6	0	1	5	6
K7JDV4	9	6	0	1	5	6
KDLBP2	9	6	0	1	5	6
KJKZTY	9	6	0	1	5	6
KQT7ZQ	9	6	0	1	5	6
KRE7MZ	9	6	0	1	5	6
KY3X6E	9	6	0	1	5	6
KZFGW4	9	6	0	1	5	6
L2ZX6B	9	6	0	1	5	6
LC4TY2	9	6	0	1	5	6
LP8E3Q	9	6	0	1	5	6
LPVE8G	9	6	0	1	5	6
LR8HHR	9	6	0	1	5	6
M6WTQH	9	6	0	1	5	6
MARGHX	9	6	0	1	5	6
MC2HJN	9	6	0	1	5	6
ME6D3R	9	6	0	1	5	6

TABLE 1

WebCode	Digit1	Digit2	Digit3	Digit4	Digit5	Digit6
MFZW4T	9	6	0	1	5	6
MHLLBY	9	6	0	1	5	6
N4DDR8	9	6	0	1	5	6
NCA4HN	9	6	0	1	5	6
NRNE26	9	6	0	1	5	6
P3Y77Q	9	6	0	1	5	6
P4UXUW	9	6	0	1	5	6
P6AUY3	9	6	0	1	5	6
P8RCGL	9	6	0	1	5	6
PHGZRG	9	6	0	1	5	6
PN2YBA	9	6	0	1	5	6
PRFUNL	9	6	0	1	5	6
PY3JBG	9	6	0	1	5	6
QHUUWUZ	9	6	0	1	5	*
QZRF9A	9	6	0	1	5	6
R62NHQ	9	6	0	1	5	6
R8QYLQ	*					
RAZ4YE	9	6	0	1	5	6
RDZEVE	9	6	0	1	5	6
RUJ4XU	9	6	0	1	5	6
RVXHWP	9	6	0	1	5	6
T8HCDN	9	6	0	1	5	6
T8ZMMF	9	6	0	1	5	6
T9E36N	9	6	0	1	5	6
TDMDAB	?	?	?	6	?	?
TMMQQR	9	6	0	1	5	6
TT8PAL	9	6	0	1	5	6

TABLE 1

WebCode	<u>Digit1</u>	<u>Digit2</u>	<u>Digit3</u>	<u>Digit4</u>	<u>Digit5</u>	<u>Digit6</u>
TUK6RT	9	6	0	1	5	6
TV847P	9	6	0	1	5	6
TVP4DL	9	6	0	1	5	6
TZKXBM	9	6	0	1	5	6
UB3N36	9	6	0	1	5	6
UHD6YJ	9	6	0	1	5	6
UHHDCD	9	6	0	1	5	6
UL66BM	*					
UM88XD	9	6	0	1	5	6
UZGF6B	9	6	0	1	5	6
V386YG	9	6	0	1	5	6
VFEV2N	9	6	0	1	5	6
VGZTW9	9	6	0	1	5	6
VK2RFD	9	6	0	1	5	6
VLWJ3K	9	6	0	1	5	6
VR42JL	9	6	0	1	5	6
VZ3C84	9	6	0	1	5	6
VZD7WC	9	6	0	1	5	6
W3FTJE	9	6	0	1	5	6
WDVMU8	9	6	0	1	5	6
WFQ8UD	9	6	0	1	5	6
WM2A38	9	6	0	1	5	6
X3BK7K	9	6	0	1	5	6
XB984C	9	6	0	1	5	6
XF2CUV	9	6	0	1	5	6
XGFPKD	9	6	0	1	5	6
XXW2N4	9	6	0	1	5	6

TABLE 1

WebCode	<u>Digit1</u>	<u>Digit2</u>	<u>Digit3</u>	<u>Digit4</u>	<u>Digit5</u>	<u>Digit6</u>
Y2T2KE	9	6	0	1	5	6
YAN7DF	9	6	0	1	5	6
YD7DRG	9	6	0	1	5	6
YJYCK6	9	6	0	1	5	6
YNRAYA	9	6	0	1	5	6
YQHFR8	9	6	0	1	5	6
YVBJJP	9	6	0	1	5	6
YWJPLT	9	6	0	1	5	6
YZFGR4	9	6	0	1	5	6
Z42FRK	9	6	0	1	5	6
ZFQCQX	9	6	0	1	5	6
ZFVR7J	9	6	0	1	5	6
ZGRDMG	9	6	0	1	5	6
ZTEJJR	9	6	0	1	5	6
ZVRTA6	9	6	0	1	5	6
ZXT229	9	6	0	1	5	6
ZZD22P	9	6	0	1	5	6

Response Summary						Participants: 177
	<u>Digit1</u>	<u>Digit2</u>	<u>Digit3</u>	<u>Digit4</u>	<u>Digit5</u>	<u>Digit6</u>
Consensus	9	6	0	1	5	6
Number	173	172	173	173	172	171
Percent	98%	97%	98%	98%	97%	97%

* See Conclusions (Table 2) and/or Additional Comments (Table 5).

Conclusions

TABLE 2

WebCode	Conclusions
2292KL	Item 1-01 was submitted with an obliterated serial number. The number was restored as 960156.
2D2LZC	The serial number of Item 1 was restored using magnetic particle restoration techniques and was found to be: 960156.
2DW7LQ	The obliterated serial number has been restored and has been readed[sic] like this: 960156.
2QR6TW	On 2010-04-22 during the performance of my official duties I received a sealed evidence bag with number FSB-1286271 from [Department], containing the following exhibit: 3.1 One (1) piece of stainless steel bar stock with suspected serial number obliterated and marked by me "62439/10". The intention and scope of this forensic examination comprise the following: 4.1 Techniques associated with the recovering and restoration processes of obliterated alphanumeric figures on metals. After application of the electro magnetic process, I determined the serial number of the stainless steel bar stock mentioned in paragraph 3.1 possibly as 960156 towards the centre of the stainless steel bar stock.
2T8WFJ	Attempts were made to restore the serial number believed to be hidden by the obliterations on the piece of stainless steel bar stock as contained in Item 1. Restoration efforts revealed six (6) numeric characters as follows: 9 6 0 1 5 6. The numeric characters were recovered in the sequence shown.
2WVB7E	Based on the above examination and findings, I am of the opinion that the original serial number on the piece of stainless steel bar stock 'Item 1' is '960156'.
2XQMAU	The number 980156 was restored to the obliterated area on specimen 1-1 using chemical etchant after polishing.
397ZY2	Item 1-1: Trace Item-Steel bar with obliterated serial number: A steel bar measuring approximately 2 11/16 inches x 1 inch. Visual examination of this item revealed the presence of grind marks in the center of the bar. This area was etched with acid solutions and the following was restored: 9 6 0 1 5 6
3LXGWF	My examination showed the serial number to be 960156.
4LCCRM	Received for examination was a rectangular shaped piece of stainless steel with an area on one side that was scratched. A restoration carried out on this area revealed a sequence of six digits which was "960156".
4VB7PR	The serial number of the stainless steel bar is 960156
4WNXJU	The obliterated serial number of Item 1 was magnetically, physically and chemically processed to read: "960156".
687UFD	Treatment of the serial number site revealed the erased number to be 960156.
6NM2BG	The obliterated number present on Item #1 was chemically processed. The resulting impression was visualize[sic]: 960156.
6P2C82	The surface was weakened, by magnetic and chemical restoration, the obliterated serial number was restored, 960 156, which corresponds to the pattern provided.
6RAF3C	[No Conclusions Reported.]
6TZJTY	The number was raised using chemical etchants and read 960156.
78PWMD	The serial number of Item 1 was restored and reads: 9 6 0 1 5 6

TABLE 2

WebCode	Conclusions
79UQ2K	Examination and restoration of the obliterated area on Item 1 revealed the following characters interpreted as "960156".
7BG6TF	The serial number has been restored successfully and appeared clearly and entirely.
7FBB3B	[No Conclusions Reported.]
7LZLKL	I restored the serial number on the Item 1 piece of stainless steel bar stock. The number was determined to be 960156.
7QRVM8	Examination of Item 1 revealed an area from which metal had been removed by a machining process (milling). This area was prepared and treated with chemical reagents in an attempt to restore any obliterated numbers to a legible condition. As a result of this processing, the number "960156" was developed.
88ZY9C	Forensic procedure's[sic] were applied to the machined area, a series of previously stamped characters were restored, that read: 960156
8B9RHN	The serial number of the stainless steel bar, Exhibit Item 1, is 960156.
8HQXEV	The surface is unreadable because it was weakened, by magnetic restoration, the obliterated serial number was restored, 960 156, which corresponds to the standard of comparison Aluminium Standard (component for performing the test).
8J6H86	Using chemical etching techniques the serial number was restored to read 960156.
8KZAUC	The serial number on the piece of stainless steel bar stock in item 1 was determined to be 960156.A[sic]
8MMPK8	Following an attempt to chemically restore an erased serial number on the submitted item the number 960150 was recovered.
8NZADG	Upon electrochemical treatment on the filed surface the original number was restored and read as 960156
8WVE7H	Chemical detection of numbers on a metal sample (25mm x 70mm). Start time at 14H00 and finished at 15H00. Numbers stamped = 960156
9HQFVQ	The examinations performed on the mill obliterated number stamped on the piece of steel sent to us allowed us to get the following result: 960156
9HTX33	The serial number, located on the surface of Ex. 1 had been purposely obliterated. Examination involving mechanical and chemical processing restored the original serial number to be 960156.
9QM4V4	Serial number restoration revealed the number "960156".
A72KQC	Examination of the submitted piece of stainless steel bar stock revealed an obliterated serial number. Visual and chemical examination of the submitted bar stock revealed the obliterated[sic] serial number to read 960156.
ABK4BD	The number was restored to 960156.
AGBFC2	Examination of Item #1 revealed one (1) portion of metal bar stock approximately 2¾ inches long, 1 inch wide, with serial number obliterated. Using standard laboratory restoration techniques, an attempt was made to restore the serial number on Item #1 with the following results: Serial Number: 9 6 0 1 5 6 was restored to Item #1.
AHAMRZ	Standard chemical restoration techniques revealed the following characters: 960156.
AKXV3W	After use of our standard procedures for obliterated serial numbers restoration, we found the

TABLE 2

WebCode	Conclusions
	following numbers: 960156.
B6BAUM	The serial number on Item 1, metal block, was obliterated. It was restored to: 9601?6. With the ? being either a 3 or 5. The CTS website indicates that the serial number is six characters in length all being numerics.
B7C4NE	The piece of metal bar had an area of milling. This area was polished and chemically etched. The following number was restored: 960156.
B88LPF	The characters impressed into Item 1 were intentionally obliterated. The following characters were restored to the obliterated area of Item 1: 960156
BAAJ4P	The obliterated serial number was partially restored and concluded to most likely be 960156.
BEJU6V	Examinations showed the serial number of Item 1 to be obliterated. The serial number was restored using magnetic particle restoration and was observed to be: 960156.
BFUJK2	Examination and chemical processing of Item 1 restored the original obliterated serial number, which was determined to be "9 6 0 1 5 6".
BPMVT2	The obliterated serial number on item 1 was restored to read: "960156"
BQGGLT	Item 1 - one (1) stainless steel bar stock. 1 - one (1) aluminum standard. The submitted specimen marked Item 1 is a piece of stainless steel bar stock with a suspected obliterated serial number. Item 1 was microscopically and chemically processed. As a result of examination it was concluded that Item 1 obliterated serial number was restored to its original number to read 960156.
BXHXUD	Using the acid-etch method, the defaced serial number of the Item 1 piece of stainless steel bar stock was completely restored to read '960156'.
C367JC	The submitted sample is a piece of magnetizable flat steel. On one side the sample has a milling of approximately 24.9x25.6 mm and a depth of approximately 0.2 mm. After preparing the sample, the Magnetic Particle Method was used to examine it. The obliterated serial number was successfully restored with this method and was clearly visible.
C9E4NC	Physical processing of the submitted metal plate restored the obliterated, original serial number to read "960156".
C9TLCP	Following electrochemical etching, using Fry's Reagent, the obliterated serial number on the stainless steel[sic] bar stock was restored as follows: 960156.
CYGR TG	The serial number "960156" was restored on the stainless steel bar stock, Item 1
D33V3Y	Item 1 was examined and the suspected obliterated serial number area was chemically processed. The serial number was restored to read "960156".
D4A7Y3	On the piece of stainless steel bar (item 1), there was a zone of material loss. In this zone wet magnetic particle inspection and corrosive method with the Fry's etchant were used. In both procedures the numbers 960156 were made visible again.
D6PBTU	Using an electromagnetic restoration method, the serial number on the stainless steel bar was restored to read 9, 6, 0, 1, 5, 6.
D7ZAPP	Item 1 was examined and the suspected obliterated area restored with the Magnetic Particle Inspection Method (Magnaflux). The examination and restoration method revealed a 6-digit serial number interpreted as "960156". The characters of the restored serial number are consistent with the characters evident on the provided Aluminum reference standard on direct comparison. The suspected obliterated serial number was restored as "960156" within reasonable scientific certainty.

TABLE 2

WebCode	Conclusions
DP223C	Number Restoration techniques revealed a line of characters. These were "960156".
DWUD2L	The serial number of the object sent for expertise has been obliterated. The obliterated serial number on the object has been "960156".
E36M62	Physical processing of the submitted piece of metal restored the obliterated, original serial number to read "960156."
EAGW29	The original, obliterated serial number on Item 1 was restored and determined to be "960156".
EEQ9ZU	The obliterated serial number of Item 1 was restored by means of chemical etching techniques and was found to be: 960156.
ENYQMY	Examination of the submitted barstock found the manufacturer's serial number to have been obliterated. Physical and chemical processing of the submitted barstock restored the obliterated, original serial number to read "960156".
EU2YUM	Item 1 was examined and cleaned prior to applying the magnetic particle inspection method to the suspected obliterated area. The restoration method revealed a six digit serial number interpreted as (960156). The numerical characters of the restored serial number are consistent with the characters evident on the provided reference standard. The suspected obliterated serial number was restored as (960156) within reasonable scientific certainty.
EVEDHW	Examination and chemical processing of Exhibit 1 restored the original obliterated serial number, which was determined to be "960156".
EXNDLH	Serial number defaced by abrasion, restored using chemical etching method.
EXZDHC	The serial number of item 1 was restored and was found to be 960156.
F2FZUW	The serial number approximately 0.3mm got to removal deeply.[sic] According to the result of the examinations the removed serial number was 960156.
F3XVQQ	Item 1 was submitted with defaced serial number. Number 960156 was restored.
FKZP73	A forensic procedure was performed on the machined area of bar stock. A full series of restamped characters/numbers were recovered. The full number was 960156.
FNDFAJ	The serial number appeared to have been deliberately obliterated through grinding. I used magnetic particle inspection, polishing, and chemical etching techniques to restore the serial number to 960156.
FRB2Y2	Examination and magnetic processing of the Q-1 bar stock restored the original obliterated serial number, which was determined to be 960156.
FRY684	Using magnetic restoration techniques, the obliterated serial number was restored to read "960156."
FTA43C	The obliterated number was restored using a combination of magnetic and polishing techniques. The complete obliterated number is 960156
GGMP2U	Examination and processing of Item 1 restored the original, obliterated serial number. The serial number was determined to be "960156."
GVALRR	The obliterated area of Item 1 was prepared and treated with restoration reagents. The following characters were raised: 960156.
H3WMW8	After applying different reagents the serial number obtained is 960156.

TABLE 2

WebCode	Conclusions
H7BENP	The item 1 obliterated serial number, located in the center of the steel bar stock, was chemically/magnetically processed and restored to read "960156"
HALTTG	[No Conclusions Reported.]
HC98JC	There are two methods for number restoration from metals. The first one is the physical method using the magneto-optical device. The second one is the chemical method which needs to prepare a solution depending on the type of questioned sample. In this test we used the second method by preparing a solution of Cupric chloride, distilled water and Concentrated HCl, which is suitable for the questioned sample(Steel), and we have got the result in 2 minutes, by putting the sample in the solution and the result was 9 6 0 1 5 6
HLG2FQ	The serial number of Item 1 as restored is 960156.
HMQNCJ	After application of the electro-magnetic process, I determined the serial number of the exhibit mentioned in 3.1 as 960156.
HXKR2Z	I saw that the piece of stainless steel had an area where some of the metal had been removed by milling or similar machining method. I made a chemical examination of the area and recovered the numbers '960156'.
J7YD3L	Inconclusive. There is not enough surface info on the metal to arrive at a definitive conclusion.
J9VQZZ	The obliterated serial number was restored to read: 960156
JK2TBW	Restoration procedures on exhibit SN revealed the serial number to be: 960156.
JLKPR3	Physical and chemical processing of the submitted piece of stainless steel bar stock restored the obliterated, original serial number to read "960156".
JRHHP	I am of the opinion that the serial number has been tampered. After examination, the original serial number was restored and read as 9 6 0 1 5 6.
JTEVK4	Physical processing of the submitted item restored the obliterated, original serial number to read "960156."
K2TUZZ	A serial number restoration was conducted on Item 1 using crime scene method No. 22 - chemical serial number restorations. The serial number was successfully recovered and is "960156".
K6B942	On the 21st May 2010 I examined a piece of stainless steel bar 25mm wide x 5mm thick. On the centre of the bar was a milled strip 25 mm wide x 0.05mm deep. I prepared the surface of the milled area to a mirror finish, I then applied Fry's Reagent to the surface which revealed the characters "960156"
K7JDV4	Examination and chemical/magnetic processing of Item 1 restored the original obliterated serial number which was determined to be 960156.
KDLBP2	I treated the area where the individual identifying serial number sequence is normally stamped by the manufacturer and restored the following characters "960156".
KJKZTY	Using chemical etching techniques, the serial number was restored to read: 960156.
KQT7ZQ	Visual examination of this item revealed the presence of grind marks on one side of the bar. This area was etched with acid solutions and the following was restored: 960156
KRE7MZ	The serial number was restored on the stainless steel bar stock (item 1) and determined to be "906156".

TABLE 2

WebCode	Conclusions
KY3X6E	The serial number on questioned Item 1 was obliterated (grinding). The serial number was restored to 960156, using polishing followed by the application of Fry's Reagent.
KZFGW4	Forensic restoration techniques were applied to the machined area and the following series of previously stamped characters was restored that read: 960156
L2ZX6B	After application of the electro magnetic process, I determined the numbers of the item mentioned in 3.1 possibly as 960156.
LC4TY2	Examination of the piece of stainless steel bar stock revealed that the serial number has been obliterated. Physical processing of the steel bar stock restored the obliterated, original serial number to read "960156".
LP8E3Q	Item 1 obliterated serial number was chemically processed and restored to read "960156"
LPVE8G	Item 1 was processed with acid etching chemicals in an attempt to restore the obliterated serial number. The chemical processing restored the obliterated serial number as: 960156
LR8HHR	The serial number area on Item 1 was prepared and treated with acid restoration solutions. The serial number 960156 was restored to legible condition.
M6WTQH	The serial number of Item 1 was restored using magnetic particle testing and was found to be: 960156.
MARGHX	The obliterated serial number on the piece of stainless steel bar stock (item 1) was restored to read 960156.
MC2HJN	Item 1-1 steel bar with obliterated serial #: This area was etched with acid solutions and the following was restored: 960156
ME6D3R	Physical and chemical processing of the submitted stainless bar stock with suspected obliterated serial number, restored the obliterated serial number to read "960156".
MFZW4T	The submitted steel bar stock, with obliterated serial number, was analyzed. The surfaced[sic] was prepared by fine polishing with a dremel tool. (44 extra fine) The verified[sic] serial number recovered was #960156. This number could be checked through [Database] for any matches.
MHLLBY	Examination of Item #1 revealed the presence of an obliterated area. Restoration of the obliterated area revealed the following inscription: 960156.
N4DDR8	[Laboratory] examined a piece of steel that had the area of the serial number obliterated by smooth grind method. The area was pretreated with a dremel tool and then Fry's solution and FeCl ₂ was added. The following serial number was restored: 960156.
NCA4HN	Examination and chemical processing restored the original obliterated serial number which was determined to be "960156."
NRNE26	The recovered digits on the piece of stainless steel bar were found to be "960156".
P3Y77Q	On Item 1 was restored a marking with 6 digits: "960156".
P4UXUW	Examination and chemical processing restored the obliterated serial number, which was determined to be "960156"
P6AUY3	Through standard serial number restoration techniques the following serial number was restored to read: 960156.
P8RCGL	Examination and processing of Item 1 restored the original obliterated serial number to read "960156".

TABLE 2

WebCode	Conclusions
PHGZRG	The serial number has been defaced by a milling process. The serial number (960156) was restored by acid etching.
PN2YBA	The obliterated number on the piece of aluminum (exhibit 1) was restored to read 960156
PRFUNL	Item 1 was examined, prepared, and etching solutions were applied. The following numbers were restored: 960156.
PY3JBG	The obliterated serial number was determined to be 960156.
QHUWUZ	Polishing and chemical etching techniques were used to restore the serial number. The serial number was restored to read "96015*" where "*" denotes either a "6" or an "8".
QZRF9A	After application of the electro magnetic process I determined the serial number of exhibit as 960156.
R62NHQ	The obliterated serial number on the stainless steel bar stock in Item 1 was completely restored and found to be 9 6 0 1 5 6.
R8QYLQ	1. Examination of the obliterated area found on Item 1 (steel block) disclosed it to be consistent in being damaged by a milling type tool/action. 2. Using the Magnetic Particle Inspection (MPI) and Magnaflux, the damaged area found on Item 1 was processed and determined and the following possible numbers were restored: "960156".
RAZ4YE	A serial number restoration was conducted on Item 1 which revealed the number 960156.
RDZEVE	On 03-30-2010, I received Serial Number Restoration Proficiency #10-525 from the [Laboratory] Quality Assurance Coordinator for testing. From Serial Number Restoration Proficiency #10-525: Item 1: One (1) piece of stainless steel bar stock with suspected obliterated serial number. Results: Serial number processing resulted in the restoration of the obliterated serial number. Restored serial number is: 9 6 0 1 5 6. Results were verified by [Examiner]. Item 1 will be returned to the Quality Assurance Coordinator.
RUJ4XU	The serial # of the metal bar, Test #10-525, was restored and determined to be serial #960156.
RVXHWP	The submitted piece of stainless bar stock with obliterated serial number (Item 1) was examined. Attempts were made to recover the obliterated serial number on (Item 1). The restored serial number was determined to be 960156. Images were taken of the restored serial number and are on file in the [Laboratory] Firearms Section.
T8HCDN	The serial number area was prepared and treated with chemical reagents, and as a result of the use of these chemical reagents, the following characters were observed 960156.
T8ZMMF	Examination of the surface of the stainless steel bar revealed evidence of an obliterated serial number. The surface was treated and the following original serial number was restored. 960156
T9E36N	Item 1 is a piece of stainless steel bar stock with suspected obliterated serial number. Using standard restoration techniques, the obliterated serial number on Item 1 was restored to read: 9 6 0 1 5 6.
TDMDAB	The exhibit 1 obliterated serial number was chemically processed and partially restored to read ???6??. The question marks represent unrestored characters.
TMMQQR	Chemical etching agents were applied to the area of the obliterated serial number, resulting in the number: 960156 being restored.
TT8PAL	1. Examinations showed that the serial number of Item 1 had been obliterated. The original obliterated serial number was restored using chemical etching techniques and it was

TABLE 2

WebCode	Conclusions
	determined to be: 960156.
TUK6RT	Examination of the submitted steel bar found the manufacturer's serial number to have been obliterated. Physical and magnetic processing of the submitted steel bar restored the obliterated, original serial number to read "960156".
TV847P	The serial number on the piece of stainless steel bar stock in item 1 was determined to be 960156.
TVP4DL	Serial number restoration techniques via acid etching yielded the serial number 960156.
TZKXBM	Examination and processing of the Item 1 bar stock restored the original obliterated serial number, which was determined to be "960156".
UB3N36	The serial number was chemically restored to 960156
UHD6YJ	The obliterated serial number on the Item 1 piece of stainless steel bar stock was restored to read 960156.
UHHDCD	The damaged area of Item 1 was treated [sic] Fry's reagent and the numbers 960156 were developed.
UL66BM	An attempt to restore the serial number of Exhibit 1 was made. The following possible number was observed: 960156.
UM88XD	I found, there was filling mark on the surface of the steel bar. On electrochemical treatment on the filled surface region, I found a number '960156' emerged on the filled surface. Hence, I am of the opinion that the number of the steel bar was tampered and the original number was '960156'.
UZGF6B	An obliterated serial number on Item #1 was restored to read 960156. Item #1 was subjected to a multi-step restoration process including application of a magnetic field and use of chemical etchants.
V386YG	The obliterated number on the piece of metal, item 1, was chemically restored to read "960156."
VFEV2N	The bar stock submitted in item #1 had an area in the middle of the material which had been obliterated. The area was examined, polished and processed with a chemical etching process. The numbers that were restored during these processes were 960156.
VGZTW9	Laboratory chemical restoration procedures revealed the following serial number: 960156
VK2RFD	Item 1 was examined and the obliterated area was prepared and treated with restoration reagents. The number "960156" was developed on Item 1.
VLWJ3K	On May 18, 2010 an area of obliteration was observed on the middle portion of the stainless steel bar stock (Item #1). Serial number restoration was successful. The serial number was recovered as: 960156.
VR42JL	Item 1 is a piece of stainless steel bar stock with an obliterated serial number. Using standard serial number restoration techniques the serial number of Item 1 was restored to read 960156.
VZ3C84	The serial number was restored to read 960156.
VZD7WC	Examinations showed the serial number on Item 1 to be obliterated. The serial number on Item 1 was restored via magnetic processing techniques and was found to read: 960156.
W3FTJE	The number could clearly be restored.

TABLE 2

WebCode	Conclusions
WDVMU8	In our opinion, the number "960156" was recovered from treatment of an abraded area of the metal.
WFAQ8UD	Visual examination of this item revealed the presence of grind marks on the center of the bar. This area was etched with acid solutions and the following was restored: [Participant did not restate the recovered digits.]
WM2A38	I was able to restore the six digits of the serial number on the metal bar as follows: 960156.
X3BK7K	On the listed date and time test item number 10-52[sic] was received[sic] and taken into custody. The item was inspected, and the following was observed and documented. The item was a 3 x 1 piece of metal with the middle portion removed and/or altered. The item was visually inspected. The[sic] photographed. The use of fine grade paper was utilized prior to the application of any chemical acid. After repeating several applications of acid the following numbers were observed, 960156. The digits were photographed and then sealed with a clear sealer, protective coat. No further examinations or processing was conducted at this time.
XB984C	The serial number of Item 1 as restored is 960156.
XF2CUV	The serial number "960156" was restored on the stainless steel bar stock, Item 1.
XGFPKD	Exhibit 1 (Item 1) - The serial number was restored and was found to be: 960156.
XXW2N4	The surface of the piece of metal was weakened; by chemistry restoration, the original serial was restored, which corresponds to the standard characters used as patterns.
Y2T2KE	Examination and electrochemical processing of Item 1 determined the original obliterated serial number to be 960156.
YAN7DF	Serial number restoration was done 04/28/10, by Acid Etching method to reveal following numbers - (960156).
YD7DRG	Item #1 is a stainless steel bar with suspected obliterated serial numbers. Serial number restoration procedures were performed and the serial number was restored to read 960156.
YJYCK6	Item 1 - Piece of stainless steel bar stock with suspected obliterated serial number. The submitted specimen marked Item 1 was examined and identified as a stainless steel bar stock with a suspected obliterated serial number. The obliterated serial number was chemically processed and successfully restored to read "960156".
YNRAYA	Utilizing an electromagnetic restoration technique, the obliterated six digit serial number was recovered to read "9-6-0-1-5-6".
YQHFR8	Item 1 was submitted with its[sic] serial number defaced, apparently by circular grinding. Chemical restoration revealed the digits "960156".
YVBJJP	The acid etch method was used to completely restore the defaced serial number on the Item 1 steel bar to read: 960156.
YWJPLT	The serial number "960156" was restored on the stainless steel bar, Exhibit 1.
YZFGR4	The number that has been whiped[sic] out is "960156". There is no indication for any other digits.
Z42FRK	Using chemical etching techniques, the serial number was restored to read 960156.
ZFQCQX	The obliterated serial number has been restored as 960156.
ZFVR7J	The defaced serial number on the Item #1, stainless steel bar stock, was restored to read

TABLE 2

WebCode	Conclusions
	what appeared to be 960156.
ZGRDMG	Attempts were made to restore the obliterated serial number on the stainless steel bar (Item 1). The recovered serial number was determined to be 960156. Digital images of the recovered serial number on the steel bar will be retained in the laboratory case file.
ZTEJJR	The serial number on the piece of stainless steel was successfully restored as "960156".
ZVRTA6	Item 1-1: Steel bar with obliteration: Visual examination of this item revealed the presence of grind marks on the middle of the steel bar. This area was etched with acid solutions and the following was restored: 9 6 0 1 5 6
ZXT229	I found this plate had been filed, and no number was found. On electrochemical treatment on the filing marks, I found the number '960156' had been stamped on this plate.
ZZD22P	Acidic method used on this sample has allowed us to come to light its serial number which is 960156.

Sample Preparation

TABLE 3

WebCode	Sample Preparation
2292KL	The ground area was buffed using a dremel w/ buffing wheel
2DW7LQ	Light buffing, polishing
2QR6TW	The stainless steel bar stock was cleaned with non chlorinated solvent cleaner. (ARDROX 5319).
2T8WFJ	The area of the obliteration from Item 1 was polished using 320 grit wet/dry sandpaper, used wet. The area was polished until the visible surface striations were eased. The area was then treated with reagent.
2XQMAU	The obliterated area was polished using a dremel with a polishing wheel.
397ZY2	Polishing using dremel with sandpaper attachment
3LXGWF	Methods adopted using Laboratory procedures for restoration. Area containing milled toolmarks was sanded lightly using a fine stone. This removed the course[sic] toolmarks to increase visibility of ghosting digits produced.
4LCCRM	The scratched area was sanded with the following grade sandpaper to a mirror-like finish: P80, 120, 200, 400, 600 and 1200.
4VB7PR	Polished the area using an Extra Fine Dremel polishing wheel, then polished the area using a green glow tripoli compound for stainless steel, to give a fine finish.
4WNXJU	Item 1 was subjected to magnetic particle analysis as received. A Dremel tool with an abrasive polishing wheel was used to polish the surface in preparation for chemical etching.
687UFD	Polishing the erased site smooth using a very fine wet & dry sandpaper (P1200).
6NM2BG	Polishing
6P2C82	The confirmation of the magnetic character of the surface was made with a magnet. Polishing and cleaning the surface.
6RAF3C	Visual examination w/ photograph
6TZJTY	The sample was polished
78PWMD	Light polishing with emery paper.
79UQ2K	Item 1 was cleaned with acetone & polished with a 400 grit metal polishing wheel.
7BG6TF	Manual polishing with coarse and fine sandpaper (emery) in the following order: <80/ 360/ 480/ 600/ 1000/ 1200/ 3/000/ 4/0 "paper of rose". Polishing with rotating tool (dremel) & felt + cream "glass quality". Degrease with acetone[sic].
7LZLKL	Wet/Dry Sandpaper (manual); Dremel tool
7QRVM8	Polishing with an abrasive polishing wheel on a flexible-shaft Dremel tool, followed by light polishing with 0000 steel wool/oil. Surface was then degreased and chemically processed.
88ZY9C	A reposit coat was taken of the stainless steel bar stock. Method 2 Version 1.3. The surface was cleand[sic] and polished. Method 1 Version 2-4.
8B9RHN	1) The area was sanded with a dremel using a fine sanding wheel. 2) The area was buffed/polished with a felt polishing wheel using the dremel and a polishing compound for stainless steel (Brownell's Green Glow).
8HQXEV	The surface was cleaned with acetone, then, was lifted with Mikrosil and graphite and finally returned to clean the surface with acetone.

TABLE 3

WebCode	Sample Preparation
8J6H86	Polishing using sandpaper
8KZAUC	A "Dremel" tool with a polishing wheel was used to polish the obliterated area.
8MMPK8	The surface of the machined area was prepared with grit paper, using a course[sic] to fine grade.
8WVE7H	Cleaning with sandpaper and acetone
9HQFVQ	Before any further operation, pictures of the sample are taken. Examination through a binocular microscope. The sample is cleaned of any trace of oil or grease.
9HTX33	Polishing
9QM4V4	Fine grinding with XF Rubberized abrasive disc.
A72KQC	Polishing
ABK4BD	1. Examine the metal to see if any partial characters are visible. 2. Smooth the surface. 3. Polish the surface.
AGBFC2	Surface polish w/ moto-tool, to remove deeper machine marks.
AHAMRZ	Lightly smoothed surface with Dremel Tool.
AKXV3W	1. Determination of kind of metal (Ferro-magnetic stainless steel). 2. Polish the surface to a mirror-like finish by hand-held power tool as "Dremel" (grade 600).
B6BAUM	Smoothing/Sanding with fine abrasive wheel attached to Dremel, followed by polishing with a cotton wheel and polishing compound
B7C4NE	Sanding with wet & dry paper then polished to a mirror finish.
B88LPF	Prior to MPI: no preparation methods used. Prior to Griffin's reagent: light sanding w/ Dremel tool.
BAAJ4P	Polishing with a dremel tool and sand paper
BEJU6V	No surface preparation was necessary prior to restoration.
BFUJK2	Polishing with a Dremel tool.
BPMVT2	Obliterated area on item 1 was polished with polishing wheel & compound
BQGGLT	Dremel polishing tool was used.
BXHXUD	Polishing.
C367JC	The sample was cleaned, any remains of grease were removed and the sample was then lacquered white to enhance contrast.
C9E4NC	The sample was sanded with a fine sandpaper to smooth the toolmarks from obliteration.
C9TLCP	The obliterated number surface was polished using a Struers Transpol-2 portable grinding and polishing machine and 600 grit SIC grinding paper.
CYGRTG	Pollishing[sic] Item 1 to a mirror smooth finish with 600 grit sandpaper
D33V3Y	Sandpaper was used to smooth out the ridges left from the obliteration efforts. #220 sandpaper was used first, followed by #400.
D4A7Y3	For wet magnetic particle inspection, I used no method as a preparation. Before I used corrosive method with "Fry's" etchant, I had polished the surface of the stainless steel bar.
D6PBTU	Rough sanding using a Dremel tool with Cratex wheel, followed by wet sanding with fine sand paper. Lastly, a polishing wheel with jeweler's paste was used to buff the surface.

TABLE 3

WebCode	Sample Preparation
D7ZAPP	Obliterated area wiped down with Acetone to clean and degrease prior to applying non-destructive magnaflux.
DP223C	Hand polishing of surface with sequentially finer sandpaper, followed by a metal polish & solvent wash.
DWUD2L	Prior the recovery, we used visual method, then polished surface with smalls fine sandpaper and then with polishing pasta.[sic]
E36M62	Polishing to remove grinding marks.
EAGW29	Light polishing of rotary grinder
EEQ9ZU	Mechanical polishing of the suspected obliterated number (surface) location
ENYQMY	Polish w/ Dremel tool
EU2YUM	Item 1 - the obliterated area was cleaned with Acetone. Item 1 - was found to be magnetic.
EVEDHW	Light polishing with 400 grit sandpaper
EXNDLH	Polishing
EXZDHC	Light steel wool
F2FZUW	Before the etching procedure the surface was abraded down by abrasive papers.
F3XVQQ	1. Polish
FKZP73	A cast was taken of bar stock carved Reprisil - Method 2 Version 1.3. The surface was cleaned and lightly polished - Method 1 version 2.4.
FNDFAJ	The block of metal was examined with direct and oblique light
FRB2Y2	None. Sample already had a smooth and even surface.
FTA43C	1.) Magnaflux. 2.) Polishing.
GGMP2U	Polishing with fine grit sand paper.
GVALRR	220 grit sandpaper. Dremel tool with rubber impregnated abrasive wheel.
H3WMW8	The working surface was cleaned and polished.
H7BENP	The ground off area was sanded by hand with #240 sand paper.
HLG2FQ	The sample was sanded and polished with 400 grit sandpaper.
HMQN CJ	The obliterated area of the exhibit was polished using sand paper disc
HXKR2Z	The area was polished by using a series of progressively finer grades of wet and dry sandpaper.
J9VQZZ	Obliterated area was polished.
JK2TBW	Polished with emery wheel
JLKPR3	Dremmel tool with fine grinding bit attachment
JRHHMP	Tracing and photographing.
JTEVK4	A small amount of polishing
K2TUZZ	Fine wet/dry paper used to polish the surface by hand. Acetone used to clean surface prior to application of Fry's Reagent.

TABLE 3

WebCode	Sample Preparation
K6B942	The sample was first cleaned with Acetone and viewed under the microscope, a Reprosil cast was then taken of the milling marks. Three grades of silicon paper was then used 240-800-1200 to remove the marks and bring the surface to a mirror finish.
K7JDV4	A Dremel tool was used to lightly polish the surface.
KDLBP2	Very light use of emery cloth to smooth any rough portions of metal.
KJKZTY	Visual/stereoscope examination. Photographic examination. Sanding/polishing with a Dremel.
KQT7ZQ	Polished w/ a sanding wheel
KRE7MZ	Area polished
KY3X6E	Polished surface (buffing wheel)
KZFGW4	Cast taken using Reprosil compound - method 2 version 1-3. Area cleaned and polished - method 1 version 2-4.
L2ZX6B	The surface was cleared of scratches and other marks were removed by use of emery paper to smooth out the surface. And the surface was also polished for a mirror like surface. (Not removing to[sic] much metal).
LC4TY2	Fine grit sanding with oil lubricant to smooth the obliterated surface
LP8E3Q	Light polishing
LPVE8G	Fine grit sand paper & steel wool were used first to smooth surface. Frye's[sic] reagent was then used.
LR8HHR	Item 1 was inspected and a curved indentation that could have been the lower portion of a 0, 3, 5, 6, 8, or 9 was noted. The serial number area was smoothed with 220 grit emery paper and polished with 400 grit emery paper backed by a flat file.
MARGHX	Sand/polish smooth
MC2HJN	Sanding (medium 120 grit) of obliterated area.
ME6D3R	Light sanding
MFZW4T	Dremel tool - polish surface for Magnaflux device. Higher polish - removed swirl marks. #44 - extra fine abrasive wheel.
MHLLBY	Polish
N4DDR8	The area of obliteration was pretreated with a dremel tool
NCA4HN	Obliterated area was buffed/polished with rotary hand tool and sand paper.
NRNE26	The methods used were etching using 50% nitric acid, followed by Fry's Reagent, and 50% nitric acid again and Fry's Reagent again.
P3Y77Q	A preparation of the material was not necessary.
P4UXUW	Light sanding
P8RCGL	Polished with a fine grit sanding paper.
PHGZRG	Polishing
PN2YBA	Polish with rotary tool
PRFUNL	The altered surface was sanded manually with 220 grit and 400 grit sandpaper, then 0000 steel wool was used for the final polish.

TABLE 3

WebCode	Sample Preparation
PY3JBG	Light sanding
QHUUWUZ	Polished with a dremmel tool and sand paper.
QZRF9A	Cleaning the metal using acetone. Polishing the area to be etched with dremmel disk machine. Applied white contrast paint spray on the metal. Magnetised the metal on the magnetic yoke. Applied black magnetic suspension on the metal. The number began to appear within ± 3 seconds.
RDZEVE	I used two methods to prepare the sample prior to recovery. I lightly sanded with sand paper and then polished with a dremel tool.
RUJ4XU	A Dremel tool with a fine sandpaper attachment and also hand sanding with fine sandpaper.
RVXHWP	Polishing of the surface area
T8HCDN	Sandpaper & steel wool
T8ZMMF	The surface of the stainless steel bar was cleaned with acetone followed by treatment with emery paper (P400 grade) to provide a smooth surface.
T9E36N	Buffing wheel
TDMDAB	Polishing with Drummel[sic] tool
TMMQQR	The circular milling marks were removed with coarse emery paper, followed by successively finer abrasive papers to bring the surface to a mirror finish before applying any etchants. At this point I tried the magnetic powder referred to in "Additional Comments", before using the chemicals.
TT8PAL	1. Visual and microscopic examination. 2. Polishing techniques.
TUK6RT	Polished w/ a small sanding tool
TV847P	A "Dremel" tool with a polishing wheel was used to polish the obliterated area.
TVP4DL	The altered area was hand polished with 600 grit emery paper then 1500 grit emery paper.
TZKXBM	None - no polishing or surface preparation was performed.
UB3N36	Polishing
UHD6YJ	The area of obliteration was polished to a mirror finish prior to applying chemical etchants to the area.
UHHDCD	Polished with rubber wheel.
UM88XD	Examination and Restoration of Erased Identification Markings.
V386YG	A Dremmel tool was used to polish the surface. With no number visible after polishing, chemical etching was used to restore the number.
VFEV2N	1. Digital photography of the submitted item as received to show the condition of the material. 2. Polished the obliterated area with a Dremel tool. 3. Recorded the restored number by digital photography.
VGZTW9	Initial photograph followed by manual polishing using a fine water stone.
VK2RFD	Fine Cratex wheel & Dremel tool. Steel wool
VR42JL	Buffing

TABLE 3

WebCode	Sample Preparation
VZD7WC	The obliterated area of Item 1 was sufficiently smooth for magnetic processing as received. No additional surface preparation was required.
W3FTJE	Sample analysed: Fe / Cr / Ni. Sample polished with sandpaper. Sample etched.
WDVMU8	Abraded with fine sandpaper to remove interfering striae present from original abrasion
WFQ8UD	No methods were used. Case was documented with photography.
WM2A38	Cleaned stainless steel bar with acetone, light sanding with P600A sandpaper and then cleaned with acetone.
X3BK7K	The test item was first visually inspected to evaluate and observe any possible digits or characters that may be visible before any chemical applications. The item was documented via digital photography. Lastly, the item was tested to see what chemical process would be best suited for restoration.
XB984C	Sand paper (400 grit) was used on the area of the steel block believed to contain the serial number.
XF2CUV	With Magnaflux, nothing was done prior to attempted recovery - except taking a photo. With chemical recovery attempt, the surface was photographed prior to restoration and lightly sanded.
XGFPKD	Polishing (dremel).
XXW2N4	Clean the surface with acetone, lifting of the surface with graphite, clean the surface with acetone and polishing the surface with No. 600 sandpaper.
Y2T2KE	Polishing with Cratex polishing wheel
YAN7DF	Sanding surface with medium grade sandpaper, to smooth surface area.
YD7DRG	I. Initial inspection of the serial number area. II. Record the "as received" condition of the serial number area by stereo microscope. III. The serial number area was cleaned with acetone. The serial number was polished with an abrasive tool.
YJYCK6	Polishing wheel
YNRAYA	I started with the sample (Item 1) in condition as received, utilizing the electromagnetic process. At this point the serial number was visible, but displayed some "background markings". After noting and photographing the result, the metal was polished and buffed with a fibre wheel, mounted on a high speed mini-grinder (Dremel). The metal was cleaned with solvent and the electromagnetic process repeated, resulting in the full recovery of the obliterated serial number.
YQHFR8	Linear grinding and polishing was done to smooth the surface.
YVBJJJ	The sample was polished.
YWJPLT	Polishing - using varying grades/grits of sandpaper.
YZFGR4	Grinding using gradation of 600 and a very fine, unspecified gradation; polishing using a felt cylinder and "liquid diamond"
Z42FRK	The sample was lightly sanded/polished.
ZFQCQX	The sample was emiered using an emery cloth.
ZFVR7J	Polished with dremel tool.
ZGRDMG	Obliterated area was polished using a Dremel tool and polishing/buffing wheel.

TABLE 3

WebCode	Sample Preparation
ZTEJJR	No preparation was needed. An attempt was made to apply electro-magnetic techniques to the plate "As Is". MagnaFlux with black bath instantly produced the number. A picture was obtained.
ZVRTA6	Have already polished.
ZZD22P	The sample was pumiced by hand with abrasive paper.

Methods of Examination

TABLE 4

WebCode	Examination Methods
2292KL	Davis Reagent: approx. 10 sec.; Fry's Reagent: 10 sec.; Nitric Acid (25%): 10 sec.; Re-buffed area using a bench grinder w/ medium grit Scotch-Brite buffing wheel; Fry's Reagent: 10 sec.
2D2LZC	Magnetic Particle
2DW7LQ	Chemical etching; Mercury chloride: 10 min.; Copper sulphate: 5 min.
2QR6TW	Method: Electro Magnetic Process. a) I cleaned the surface with solvent cleaner. b) I then sprayed on a thin layer of contrast spray after shaking it well. c) I then left the surface to dry for a few seconds. d) I then attached one leg of the yoke to either side of the stainless steel bar stock and magnetized it for a few seconds (5-10 seconds). e) After shaking the black magnetic ink well I then applied it to the stainless steel bar stock. f) I then left the ink to develop and then magnetized the stainless steel bar stock again after which the number appeared. g) I then cleaned the stainless steel bar stock with solvent cleaner.
2T8WFJ	Fry's Reagent: 2 to 4 minutes**
2WVB7E	Electrochemical etching using Cupric ammonium chloride solution: The etching process was carried out by applying steady strokes with a swab using the etchant for about 10 minutes.
2XQMAU	Ferric Chloride Etchant: <1 minute at a time
397ZY2	Turner's reagent: ~5 min; Davis reagent: ~3 min; Fry's reagent: ~1 min
3LXGWF	Fry's Reagent applied using a cotton tip swab. Fry's applied 3 times during examination: 15 minutes.
4LCCRM	Nitric Acid 10%, - wiping and direct application - no results: 5-7 secs per time; Diluted Fry's reagent - wiping and direct application - no results: 5-7 sec per time; Fry's reagent - wiping only, digits restored after multiple wipes: 1-2 secs per wipe
4VB7PR	Applied a Fry's Reagent Etchant using a Q-Tip, swiping left to right, approximately eight (8) to ten (10) swipes: One (1) minute to Two (2) minutes.
4WNXJU	Magnetic Particle Analysis; Chemical etching with Fry's Reagent: 45-60 seconds
687UFD	Polishing with sandpaper: 15 minutes.; Fry's Reagent: 10-12 minutes.
6NM2BG	Ferric Chloride/HCl: 10 min intervals; The bar was mistakenly initially processed as Al with NaOH solution with no results.
6P2C82	Magnetic restoration; Solution of HNO ₃ : 60 seconds; Fry reagent: 60 seconds
6RAF3C	Magnetic
6TZJTY	Ferric chloride etchant: 35 minutes
78PWMD	Magnetic particle; Phosphoric/Nitric Acid: 15 minutes; Ferric Chloride in concentrated HCl: 15 minutes; Fry's Reagent: 10 minutes
79UQ2K	Chemical Restoration Method using Fry's Reagent: 10 minutes
7BG6TF	Fry Reagent: 6-7 min; Polishing (1200--> "paper of rose" a rotating tool & acetone[sic]); Fry Reagent: 4-5 min; HNO ₃ (90% - 3-4 drops): 1-2 min. Drying--> polishing--> Fry Reagent--> picture

TABLE 4

WebCode	Examination Methods
7LZLKL	Magnaflux; Chemical Etching: ~5-10 minutes (rubbing w/ Q-tip); Magnaflux (a final time to achieve better photo)
7QRVM8	Fry's reagent: approximately 3 min.; Repolished; Fry's reagent: approximately 3 min.; 25% nitric acid: approximately 1 min.; Cleaned/oiled
88ZY9C	The machined area of the stainless steel bar stock was swabbed with Fry's Reagent Method 9 Version 1: 45 mins.
8B9RHN	The area was swabbed with Frys[sic] Reagent using a Q-Tip, in a left to right back and forth motion: Approx. 5 to 10 minutes
8HQXEV	Magnetic restoration: 3 minutes
8J6H86	Davis Reagent: ~10 sec; Turner's Reagent: ~10 sec; Fry's Reagent: ~20 sec
8KZAUC	Fry's reagent[sic]: approx. 5 min.
8MMPK8	An acidic combination of 10% conc. HCl in Ethanol: 15 mins; Fry's Reagent: 15 mins
8NZADG	Electrochemical treatment: 10-15 minutes
8WVE7H	Several applications of acidic method: 1 hour
9HQFVQ	Light burnishing of the obliterated surface; Application of an acid solution "hard metal": about three minutes
9HTX33	Polishing; Fry's reagent
9QM4V4	Frys[sic] reagent: 4.00 min.
A72KQC	Fry's Reagent: 60 sec.; 10% Sodium Hydroxide (High lighter): 5 sec.; Polishing: (Black/corse[sic] compound[sic] w/ Polishing Wheel): 120 sec.; Fry's Reagent: 30 sec.
ABK4BD	Use Fry's Reagent with electricity.: 2 minutes
AGBFC2	Acid - Dilute Frys[sic] worked best; NaOH & Sulfuric tried: Swabbed approx 20 minutes
AHAMRZ	Acid etching: ~2 min each time; Ferric chloride (Batch #6); *Fry's Reagent (Batch #6); 20% Nitric Acid (Batch #9); 10% Sodium Hydroxide (Batch #2)
AKXV3W	Chemical and Electrolytic methods; Fry's reagent: total 5 min; (DC power supply (30V 1.5Amp, 15V 2Amp; Contrast solution HNO3: total 10 sec; Running water to stop process
B6BAUM	Fry's reagent: ~ 15-20 minutes
B7C4NE	Fry's reagent: 2 minutes
B88LPF	Magnetic particle inspection (w/ magnaflux); Griffin's reagent (swabbing): ~20 min
BAAJ4P	Sirchie Restor-A-Gel Steel: approx. 2 hours
BEJU6V	Magnetic Particle Restoration
BFUJK2	Chemical etching; Davis Reagent: ~1-2 mins; Turner's Reagent: ~1-2 mins; Frye's[sic] Reagent: ~4-5 mins
BPMVT2	Magetic[sic], using MPI-80 black magnetic particle bath
BQGGLT	Fry's Reagent: seconds; Turners[sic] Reagent: seconds
BXHXUD	Acid Etch: Turner's Reagent: 10 to 20 seconds; Fry's Reagent (1st Application): 10 to 20 seconds; Fry's Reagent (2nd Application): 30 to 60 seconds
C367JC	Magnetic Particle Method: n/a.

TABLE 4

WebCode	Examination Methods
C9E4NC	Magnetic Particle Inspection - Magnaflux - black
C9TLCP	Electrochemical etching, using Fry's reagent: 1 minute; Contrast solution (HNO ₃ 10%): 1/2 minute; Acetone (for cleaning the surface following restoration)
CYGRTG	Magnetic Particle Restoration; Chemical Restoration: 5 minutes
D33V3Y	Davis' Reagent & Turner's Reagent: 2-3 min; Turner's Reagent: 2-3 min; Turner's & Fry's Reagent: 5-10 min.
D4A7Y3	1) Wet magnetic particle inspection (MPI); 2) "Fry's" etchant: 10 min; (Fry: 120ml HCl, 90g CuCl and 100ml H ₂ O aqua dest.)
D6PBTU	Electromagnetic method: utilizes a magnet and metallic particle suspension (red).
D7ZAPP	Magnetic Particle Inspection Method (Magnaflux). No acidic method.
DP223C	25% Nitric acid - wipes: N/A; 25% Nitric acid - soak: ~1 minute; Diluted Fry's reagent - wipes: N/A
DWUD2L	Method of magneto-optical visualization[sic]; Etching with Fry's reagent alternately with cooper[sic] chloride dehydrate: 6 min
E36M62	Magnaflux
EAGW29	Magnaflux; Fry's reagent: 2 min (x2); 15% acetic acid (to remove discoloration from Fry's process for photography): 5s
EEQ9ZU	(1) Magnetic particle: N/A; (2) Mechanical polishing-(surface prep): N/A; (3) Fry's Reagent: one (1) minute; (4) Turner's Reagent (Highlighter): less than one (1) minute
ENYQMY	(1) MagnaFlux; (2) Frys[sic] Reagent: 2 min
EU2YUM	Magnetic Particle Inspection Method: N.A.
EVEDHW	Visual with Magnaflux Red; Polish and Davis' Reagent: 4 to 5 minutes; Polish and Truner's[sic] Reagent: 4 to 5 minutes; Polish and Fry's Reagent: 3 to 4 minutes
EXNDLH	Ferric Chloride; Acidic Ferric Chloride; Fry's Reagent.
EXZDHC	Magnaflux
F2FZUW	Electrolytic process of etching with Fry reagent: about 5 minutes
F3XVQQ	2. Polish; 3. Fry's Reagent: wiping less than 5 min.
FKZP73	The machined area was swabbed with cotton wool buds soaked in a Fry's Reagent solution. Method 9 Version 1: 20 minutes.
FNDFAJ	Magnetic Particle Inspection (MPI); Polished with Dremel rotary tool; Fry's Reagent: Approx. 5 minutes
FRB2Y2	Magnetic Particle Inspection (MagnaFlux)
FRY684	Magnaflux (magnetic particle inspection)
FTA43C	1.) Magnaflux; 2.) Polishing
GGMP2U	Magnaflux; Davis: 3-4 minutes; Turner: 3-4 minutes; Fry's: 2-3 minutes
GVALRR	Fry's Reagent: 10 minutes; Turner's Reagent: 1 minute
H3WMW8	Chemical reagents specific for ferrous metals: Few minutes under constant rubbing.
H7BENP	1. Magnaflux; 2. Fry's Reagent: 2-4 minutes

TABLE 4

WebCode	Examination Methods
HALTTG	Method of magnetic detectoscopy digestion with ADLER chemical reagent: 3 min
HC98JC	We prepared a solution using 45gm of Cupric chloride, 50 ml distilled water and 60 ml of Concentrated Hydrochloric acid (HCl) Mixed well to get a homogenous solution: Around 2 Minutes
HLG2FQ	Fry's Reagent: 10-15 seconds.
HMQNCJ	After the area was polished, white magnetic paint was sprayed on the obliterated area. Once dried the area was magnetised for 30 seconds with a magnetic yoke, thereafter black magnetic particle inspection fluid is sprayed on to retrieve the number.
HXKR2Z	Damaged area of metal sanded smooth and polished; Area treated with Griffin's reagent: 5 minutes
J7YD3L	Stereomicroscope
J9VQZZ	Fry's reagent: 5 min.
JK2TBW	Magnetic Particle Inspection; Fry's Reagent: 5 min.
JLKPR3	Fry's solution: ~2 minutes
JRHHP	Electrochemical etching using cupric ammonium chloride solution: 10-15 minutes.
JTEVK4	Magnaflux
K2TUZZ	Modified Fry's Reagent: 3-5 minutes.
K6B942	Method 22. version 1 (Forensic Crime Scene): Appeared within one minute.; Used acidic method. Fry's Reagent: Left for 10 mins.; 90g CuCl ₂ (Cupric chloride) 120ml HCl (Hydrochloric Acid); 100ml Water
K7JDV4	Magnaflux - magnetic method; 25% Nitric Acid; Fry's Reagent
KDLBP2	Swab - Ferric Chloride (Rubbed 40 sec.); Swab - Hydrochloric Acid (Rubbed 30 sec.); Continued above process for 5 min; Characters appeared within 4-5 min
KJKZTY	Davis Reagent: ~10-15 sec.; Turner's Reagent: ~10-15 sec.; Fry's Reagent: ~25-30 sec.
KQT7ZQ	Acid etching: ~10 min.
KRE7MZ	Chemical method with Fry's Reagent: 1 min, 5 min
KY3X6E	Polishing; Fry's Reagent: continuously brushed w/ cotton-tip applicators for less than 10 minutes
KZFGW4	Area swabbed using cotton wool dipped in Frys Reagent - method 9 version 1: 3 hours of swabbing.
L2ZX6B	1) Electro magnetic process (After prep process). 2) White background spray applied to obliterated surface. 3) Item placed on magnet and magnetic field is applied. 4) Black magnetic ink is applied over the obliterated surface and white spray. The erased no. is then visible.
LC4TY2	Light sanding with oil lubricant; Magna-flux
LP8E3Q	MPI; Additional polishing; MPI; Frys[sic]: 10 seconds
LPVE8G	Fine Grit (240) sand paper: ~4 min; Steel Wool: ~1 min; Frye's[sic] Reagent: ~2 min of swabbing
LR8HHR	Applied Turner's Reagent: 2 minutes; Applied Fry's Reagent: 1 minute

TABLE 4

WebCode	Examination Methods
M6WTQH	Magnetic particle testing
MARGHX	Magnaflux 9CM prepared bath
MC2HJN	Acid Etch: 20 mins.
ME6D3R	Fry's Reagent: 40 min; Acidic Ferric Chloride: 1 min
MFZW4T	Dremel tool polish - Magnaflux; Fry's Reagent 100%: 4 minutes
MHLLBY	Magnaflux: not applicable
N4DDR8	Fry's solution: 3-4 mins; FeCl ₂ : 1 min; Commercial solution for brass: 1 min
NCA4HN	Chemical processing by acid erosion; Fry's Reagent then 25% Nitric acid.: Fry's - 30 min, 25% Nitric - 5 min
NRNE26	50% nitric acid (7 applications): 10s to 30s; Fry's Reagent (6 applications): 10s; 50% nitric acid (3 applications): 10s; Fry's Reagent (3 applications): 10s
P3Y77Q	Magnetic particle method; Magnet-optic method
P4UXUW	Chemical; FeCl ₃ : 45 sec; Chromic Acid 10%: 45 sec; Acidic FeCl ₃ : 45 sec
P6AU3	Magnetic restoration - non destructive using black magnaflux reagent
P8RCGL	Magnaflux; Davis: 3 Minutes; Turner: 2 Minutes; Fry: 2 Minutes
PHGZRG	Acid etching: 2 minutes
PN2YBA	Ferric chloride: 5 mins
PRFUNL	Continuous swabbing with cotton-tipped applicators with acid etchants of increasing strengths.: ~4 mins., ~15 mins.
PY3JBG	Fry's Reagent: ~ 15 min
QHUUWUZ	Fry's Reagent: continuous swabbing
QZRF9A	Electro Magnetic Process.
R62NHQ	Chemical Etching Solutions: ~15 minutes total
R8QYLQ	MPI
RAZ4YE	Magnetic particle inspection using magnaflux equipment[sic]
RDZEVE	Acidic method (25% Nitric Acid): Swabbed 1 min.; Acidic Method (Fry's Reagent): Swabbed 5 min.
RUJ4XU	Davis Reagent / 10% Nitric Acid; Turners[sic] Reagent / 10% Nitric Acid; Fry's Reagent / 25% Nitric Acid
RVXHWP	Acidic ferric chloride: 2-3 min.; Sodium hydroxide; Magnaflux; Fry's reagent: approx. 5 min
T8HCDN	Davis Reagent: @ 2 min.; Turner's Reagent: @ 3 min.; Frye's[sic] Reagent: @ 1 min.
T8ZMMF	Acidic method - Turner's Reagent: 10 minutes; Acidic method - Acid Copper II Sulphate: 10 minutes; Acidic method - Fry's Reagent: 10 minutes
T9E36N	Fry's Reagent: 30 seconds - 1 minute
TDMDAB	1) Polish; 2) 25% Nitric Acid: 10-15 minutes; 3) Davis Reagent: 5-10 minutes

TABLE 4

WebCode	Examination Methods
TMMQQR	10% Ferric Chloride in 25% Hydrochloric acid: 30 Minutes; Then Frys Reagent: 5 Seconds
TT8PAL	Ferric Chloride: minutes; Acidic Ferric Chloride: minutes; Frys[sic] reagent: minutes
TUK6RT	Magnaflux
TV847P	Fry's reagent: Approx. 5 minutes
TVP4DL	Acid etching - Turner's Reagent: 1 minute; Acid etching - Fry's Reagent: 6 minutes total
TZKXBM	Magnetic Particle Method
UB3N36	Polishing; Frys Reagent: 30 sec; Cupric Ammonium Chloride: 1 min
UHD6YJ	Polishing; Chemical etching: Davis Reagent (pooled over area): ~2 minutes; Chemical etching: Fry's Reagent (swabbed over area): ~2 minutes; Chemical etching: Davis Reagent (swabbed over area): ~1 minute; Chemical etching: overswabbed w/Fry's Reagent: ~30 seconds
UHHDCD	Fry's: 10 mins
UM88XD	1) Chemical treatment using 5% Sodium Hydroxide Solution for 15 minutes and followed by, 2) Electrochemical treatment using Cupric Ammonium Chloride Solution for 8 minutes.
UZGF6B	MagnaFlux; Davis Reagent: 5 mins.; Turners[sic] Reagent: 5 mins.; Fry's Reagent: 10 mins
V386YG	Polishing - no numbers recovered; Chemical etching (Fry's Reagent): <1 minute
VFEV2N	Cleaned with Acetone and swab; Swabbed with Ferric Chloride: 2 to 3 minutes; Cleaned with Acetone and swab; Swabbed with Ferric Chloride adding electrical current to the swab: 2 to 3 minutes; Cleaned with Acetone and swab applied light gun oil to coat the number
VGZTW9	Modified Fry's Reagent: ~5 min; Re-polish outer edges; Modified Fry's Reagent: ~5 min; Re-polish last numeric area on RT; Modified Fry's Reagent: ~2 min
VK2RFD	Turner's: <3 minutes; Fry's: ~5 minutes; Turners[sic]: <1 minute
VLWJ3K	Magnetic flux
VR42JL	Fry's Reagent: - 30 seconds
VZ3C84	Turner's: 10 sec.; Fry's: 10 sec.; Buffed; Fry's: 10 sec.; Nitric Acid (25%): 10 sec.
VZD7WC	Magnetic Processing
W3FTJE	Steel solution 2 = 50 ml H ₂ O / 60 ml HCl / 45 gr CuCl ₂ : 20 sec
WDVMU8	Swabbed with acids "Fry A & B", HCl/cupric chloride & HNO ₃ : multiple applications ~5 secs each
WFQ8UD	Ferric Chloride: swabbing (not let sit on item); Acidic Ferric Chloride: swabbing (not let sit on item); 25% Nitric Acid (to help clear view): swabbing (not let sit on item)
WM2A38	Chemical etching using Turner's Reagent: 30 minutes
X3BK7K	Digital photography; Fine grade sandpaper; Acid: Twenty minutes; Clear sealer
XB984C	Visual and microscopic (sterio[sic] microscope). Acidic method using a combination of Fry's reagent and 15 % Nitric Acid. Alternating between the two. Swabbing the area with a cotton tip applicator, leaving the acid on the area a few seconds then wiping off, repeating until the number became visible: A few seconds between each application

TABLE 4

WebCode	Examination Methods
XF2CUV	Magnaflux - magnetic particle restoration; Chemical - Fry's Reagent; 72g Cupric Chloride, 96ml HCl, 96ml H ₂ O: no more than 1 minute
XGFPKD	Griffin's reagent: <1 min.; 10% sodium hydroxide reagent: <1 min.
XXW2N4	The surface is heated with a torch: 30 seconds; Solution of HCl and HNO ₃ (50% v/v): 30 seconds; Rinse with water, solution of HCl and HNO ₃ (50% v/v): 15 seconds; Rinse with water, apply acetone and take Photographs
Y2T2KE	Griffin's Reagent: ~ 5 min
YAN7DF	Fry's Reagent: 30 seconds; Acidic Ferric Chloride: 20 seconds
YD7DRG	Fry's Reagent: 20 Min.; Turner's Reagent: 40 Min.; Turner's Reagent: 10 Min.; Turner's Reagent: 10 Min.; Turner's Reagent: 20 Min.
YJYCK6	Fry's Reagent: <2 minutes; 25% Nitric Acid: <2 minutes
YNRAYA	Electromagnetic: NA
YQHFR8	Fry's Reagent: 10 min.
YVBJJP	Fry's Reagent: 1-3 minutes; Tuner's[sic] Reagent: 1-3 minutes; 25% Nitric Acid: 1-3 minutes; Acetone: 1 minute
YWJPLT	Magnaflux (with black bath); Acid Etching (with Frye's[sic] reagent): 1 minute
YZFGR4	Applying a solution according to "Fry" for 4x10 sec., 4x15 sec., 1x20 sec. and 2x30 sec. After the first 6 applications the sample was whiped[sic] using a paper towel. After the remaining applications the sample was whiped[sic] using a paper towel soaked with ethanol. At the end the sample was cleaned with 3% ethanolic nitric acid: 3 minutes
Z42FRK	Sanding/Polish; Magna glow; Turner Reagent (swabbed): seconds; Fry's Reagent (swabbed): seconds
ZFQCQX	Chemotechnical etching using solutions containing hydrochloric acid, copper chloride and distilled water (2 solutions with different concentrations): 30 min
ZFVR7J	Frye's[sic] Reagent: ~3-4 min.
ZGRDMG	Polished then Magna-Flux, polished again and Magna-Flux, Frye's[sic] reagent: 3 min.; NaOH rinse & a drop of oil: >1 min
ZTEJJR	Magna Flux
ZVRTA6	Magnetic; Acid etch: several applications - 20 seconds each.
ZXT229	Electrochemical treatment: 5 to 10 minutes
ZZD22P	Acidic method (solution made with 45g copper chloride, 180g hydrochloric acid and 100ml distilled water): only two wiping up requisite

Additional Comments

TABLE 5

WebCode	Additional Comments
2292KL	After the final buffing (listed above) Fry's Reagent was applied three more times - the number was restored.
2QR6TW	In normal circumstances a person who is qualified in the etching level would confirm my finding. The equipment used was cleaned and returned to its original place.
2T8WFJ	** The Fry's Reagent is typically left on the obliterated surface until the reaction appears to have slowed dramatically or ceased. The area is then wiped clean with methanol and observed for visible characters and if characters are observed, they are documented photographically and by sketching. The area is then carefully polished again and more Fry's Reagent is applied. The entire process is repeated until the characters are believed to be restored as well as possible. Then final photographs are taken and final sketches are made and if possible a lift of the visualized characters is made using an appropriate material. I then will often wipe the area with oil to protect it and prevent rust.
2WVB7E	I found filing marks on the area bearing the suspected obliterated serial number.
3LXGWF	Properties of stainless steel bar suitable to allow use of the Fry's Reagent.
4VB7PR	Cleaned the stainless steel bar after restoration, using water.
78PWMD	Numbers were successfully visualized by magnetic particles and verified by acid etching.
7BG6TF	HNO3 must be mixed with Fry Reagent
8HQXEY	The chemical restoration technique was not applied to prevent deterioration of the sample. In addition, the magnetic technique showed satisfactory results.
8MMPK8	After the first application of reagent no numbers were recovered. Stages 3 and 4 above were repeated leaving the Fry's reagent on for a period of 20 mins.
9QM4V4	Rinsed with acetone with metal surface preserved with Outers #445 penetrating gun oil.
AHAMRZ	* Mostly used
AKXV3W	At each step of analysis sample preparation pictures were taken.
BQGGLT	The acidic method was applied with a swab and worked continuously into the steel bar stock.
D7ZAPP	Number was visible almost instantaneously.
DWUD2L	Etching with Fry's reagent 4 min. until appears number then alternately with cooper[sic] chloride dehydrate (CuCl2*H2O) 1 min, and last etching with Fry's reagent 1 min.
EVEDHW	Excellent and very realistic test.
EXNDLH	The process of recovering the serial number included polishing, applying reagents, neutralizing reagents, observation and re-applying reagents, total time 49 minutes.
FKZP73	The restoration was straight forward with no complications.
FNDFAJ	MPI was used first to determine the location and possible orientation of the obliterated serial number.
GGMP2U	Very good, realistic test.
H7BENP	Serial number was apparent after Magnaflux process. The additional process of Fry's reagent was used to further enhance.
JTEVK4	Photographs were taken before & after

TABLE 5

WebCode	Additional Comments
K6B942	The stainless steel sample bar had a 25mm milled surface across the bar and approximately 0.05mm deep, with obvious mill marks within. If initially Fry's Reagent was unsuccessful, a further chemical with greater concentrate of HCl (Hydrochloric Acid) could be used. Some stainless steel products require the heavier concentrate!
K7JDV4	The chemicals were left on the material until the desired results were achieved.
KDLBP2	All six characters are readable and can be photographed.
KJKZTY	After each step of the process to recover the serial number, photographs were taken. Also, the sample was photographed prior to any recovery attempts.
KZFGW4	Last 2 characters took a long time to recover either due to lighter depth of penetration or due to extra material removed during machining. First 4 characters restored within ½ hour.
LC4TY2	Photographs of obliterated surface were taken before and after restoration
LR8HHR	The reliability of the above reagents was tested prior to their application to the prepared serial number area. An adjacent area on Item 1 was polished to provide a test area for the reagents.
MC2HJN	Procedure: Application of acids (hydrochloric, nitric) to surface, rinse (water), Fry's Reagent, (over a period of 20 minutes). Observation of serial number.
MFZW4T	The serial number #960156 was fully recovered utilizing the Magnaflux collar. The acid method (Fry's) was used to permanatize[sic] the number (etch) for future comparison & analysis. Photographs were taken during all steps of recovery.
N4DDR8	Next test could include a couple items with different types of obliteration methods such as scratching with different tools (broad/sharp), drilling, concave grinding, and course grind
NRNE26	For the 50% nitric acid applications, water was used to clean the bar between applications. For Fry's reagent applications, ethanol was used to clean the bar between applications. Prior to acid applications, the bar was cleaned with water and ethanol.
P4UXUW	Alternate the chemicals, until the number is restored
PRFUNL	Used Davis' Reagent first for ~4 mins. with little visible recovery. Then applied Turner's Reagent and immediately began to see numerals appear. Verified numbers and photographed. Tested both reagents on end of I-1 prior to application to serial number area. Both indicated reaction on swab to I-1 surface.
QZRF9A	The numbers appeared almost immidiately[sic].
R8QYLQ	The steel block was not solid ferrous and just a slight magnetic verification was obtained. The CTS worksheet probably needs to allow for partial restoration on the bar stock. Some labs may have difficulty raising all numbers, especially if they don't have access to the MPI process (using the chemical method).
RUJ4XU	Reagents were not left on the metal bar for any extended period of time. Reagents were continually being swiped across the stamped area. Reagents were used for about 5 minutes before moving onto the next set of reagents.
RVXHWP	Final image was taken using Magnaflux for contrast purposes
TDMDAB	I should have stayed with the nitric acid because as soon as I introduced Davis Reagent the metal began degrading past the impression.
TMMQQR	Although we do not have the equipment to visualise the number using a magnet and fine magnetic particles, I did attempt to see what could be visualised by using magnetic fingerprint powder and a magnet. This showed where the number was and that it consisted of 6 digits.

TABLE 5

WebCode	Additional Comments
	<p>It also suggested what half the numbers were but it was not clear or definitive. The literature suggested Ferric Chloride and Hydrochloric acid for stainless steel and I tried this for 30 minutes, with the number slowly becoming more apparent, however the 2nd and sixth numerals were still questionable ie 5 or 6 for the second and 6 or 8 for the 6th? The steel was washed and Fry's Reagent then applied. This resulted almost instantaneously in fantastic contrast and the numbers became very obvious and beyond doubt within seconds. I am unsure if I would have achieved this result so quickly using Fry's from the very start, or whether the first (fairly mild) reagent removed some of the material, allowing Fry's to then be so effective.</p>
TVP4DL	<p>Using a digital caliper the area to the left and right of the obliterated area was measured and found to be approximately .250 inches thick. The obliterated area was approximately .230 inches thick.</p>
V386YG	<p>On initial inspection no numbers were visible on the metal bar. Besides Fry's reagent, nitric acid (25%) and Acidic ferric chloride were applied with little or no reaction.</p>
VGZTW9	<p>Restoration was photographed at completion.</p>
VLWJ3K	<p>Black was used</p>
X3BK7K	<p>Would like to see different types of other metals to be tested.</p>
YAN7DF	<p>After applying reagents, surface was washed with distilled water and then acetone.</p>
YWJPLT	<p>Acid etching used to verify the sixth digit.</p>
YZFGR4	<p>The digits "01" were visible after 20 sec. of etching. The last digit to get visible was the "6" at the end of the number.</p>
ZGRDMG	<p>Numbers were visible @ 1st Magna-Flux application but not as clear as was desired. Second polishing and re-application of Magna-Flux was much clearer. Application of Fry's reagent was for verification and additional photography.</p>

Appendix: Data Sheet

Collaborative Testing Services ~ Forensic Testing Program

Test No. 10-525: Serial Number Restoration

DATA MUST BE RECEIVED BY May 24, 2010 TO BE INCLUDED IN THE REPORT

Participant Code:

Webcode:

Accreditation Release Statement

CTS submits external proficiency test data directly to ASCLD/LAB and FQS-International. 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 and/or FQS-International. (Accreditation Release section on the last page must be completed and submitted.)

This participant's data is **NOT** intended for submission to ASCLD/LAB or FQS-International.

Please Note: The Aluminum standard included with the sample pack contains a representation of the size and shape of the digits stamped into the questioned sample. It is also a representation of the positioning of the obliterated stamp.

Items Submitted (Sample Pack SN):

Item 1: Piece of stainless steel bar stock with suspected obliterated serial number.

1.) Please indicate the recovered digits below.

The serial number on this material consists of 6 digits.

Item 1: _____

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

Please return all pages of this data sheet.

Page 1 of 3

Participant Code:

Webcode:

Additional Testing Information

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

Five horizontal lines for text entry.

4.) What methods of recovery were used during your examination?
(Please list in order of use)

If an acidic method was used how long was the acid left on the material?

Method

Table with two columns: Method and If an acidic method was used how long was the acid left on the material?. Each column has five horizontal lines for text entry.

5.) Additional Comments

Five horizontal lines for text entry.

Return Instructions

Participant Code:

Data Sheets can be mailed or faxed (please include a cover sheet) and must be received by May 24, 2010 to be included in the report.

MAIL: Collaborative Testing Services, Inc.
Forensic Testing Program
P.O. Box 650820
Sterling, VA 20165-0820 USA

FAX: +1-571-434-1937
or Toll-Free (U.S. only): 1-866-FAX-2CTS (329-2287)
TEL: +1-571-434-1925 (8 am - 4:30 pm EST)
EMAIL: forensics@cts-interlab.com

www.ctsforensics.com

Please return all pages of this data sheet.

RELEASE OF DATA TO ACCREDITATION BODIES

The following Accreditation Releases will apply only to:

Participant Code:

WebCode:

for Test No. **10-525: Serial Number Restoration**

This release page must be completed and received by **May 24, 2010** to have this participant's submitted data included in the reports forwarded to the respective Accreditation Bodies.

ASCLD/LAB RELEASE

If your lab has been accredited by ASCLD/LAB and you are submitting this data as part of their external proficiency test requirements, have the laboratory's designated individual complete the following.

The information below must be completed in its entirety for the results to be submitted to ASCLD/LAB.

ASCLD/LAB Legacy Certificate No. _____ ASCLD/LAB International Certificate No. _____

Signature _____ Date _____

Laboratory Name _____

Location (City/State) _____

FQS-INTERNATIONAL RELEASE

If your laboratory maintains its accreditation through FQS-International, please complete the following form in its entirety to have your results forwarded.

FQS-International Certificate No. _____

Signature and Title: _____ Date _____

Laboratory Name _____

Location (City/State) _____

Return Instructions

Accreditation Release

Please submit the completed Accreditation Release at the same time as your full data sheet. See Data Sheet Return Instructions on the previous page.

*Questions? Contact us 8 am-4:30 pm EST
Telephone: +1-571-434-1925
email: forensics@cts-interlab.com*

Please return all pages of this data sheet.

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