1 Executive Summary

In the fall of 2005, the Greeting Card Association (GCA) provided a number of empty, unsealed envelopes to the United States Postal Service, Engineering facility in Merrifield, VA for the purpose of ascertaining the automation processability on currently fielded equipment. Most of these samples are currently assessed a postage surcharge based on long-standing requirements related to the physical dimensions and color of the envelopes. Specifically, the goal of the test was to determine if these samples could be processed without additional processing costs and the surcharge eliminated or reduced.

The United States Postal Service (USPS) contracted to have the envelopes prepared to simulate actual greeting card mail to the extent necessary to determine processability. In late fall, USPS received two batches of fully prepared samples. The first batch consisted of various size envelopes stuffed, sealed and stamped as if they contained an actual greeting card prepared by an individual. Many samples in this batch exceeded maximum height, maximum length, aspect ratio or a combination of these requirements and are currently subject to a surcharge based on cost associated with processing these pieces.

The second batch consisted primarily of colored envelopes that do not meet current the Domestic Mail Manual (DMM) print reflectance requirements. These samples were prepared with simulated hand written addresses and had postage applied by a popular Pitney-Bowes postage meter. As a control, addresses and postage were also applied, in an identical manner, on commercial #10 white envelopes.

This report is limited to an evaluation of how the two batches of samples described above would be initially inducted into the mail stream prior to subsequent processing. As greeting cards, the samples were processed as collection mail by the rough cull and Automated Facer Canceller System (AFCS).

By design, the rough cull and AFCS removes mail pieces with physical characteristics that cannot be processed or are prone to damage by the AFCS or subsequent mail processing equipment. With the exception of three samples very close to the aspect ratio requirements, the equipment could not achieve a satisfactory level of performance outside of the currently stated requirements. Unfortunately, this included the much-desired, square greeting card format.

Additionally, it was noted that most of the darker color samples also were not able to achieve a satisfactory level of performance in the cancellation and facing process. This was unexpected and is still being investigated. Many of these problematic colored samples also had difficulty in subsequent processing tests as well. This will be the subject of an expanded report due later this month. Any new information related to any problems unique to processing the colored samples on the AFCS will be updated at that time.

2 Pictorial Narrative of AFCS Testing

This section describes a portion of the AFCS testing performed on a group of three square card samples. This process was typical of the testing and subsequent analysis of results for all other samples.

Image 1 – Square Samples #22 (5-3/4"), #23 (6"), #24 (6-1/4")

Image 1 shows a group of three fully prepared square envelope samples prior to the commencement of this portion of the test. The actual sample quantities and processing results for the aspect ratio samples are provided in Table – 1 at the end of this report.

Image 2 – Square samples being inducted at the AFCS Rough Cull Input Hopper

This image shows three different square envelope sample sizes. The samples are intermingled and deposited into the AFCS's Rough Cull Input Hopper in a manner consistent with the standard operating procedure employed at USPS Processing and Distribution Centers (P&DC) for the processing of collection mail.

The actual equipment utilized for this test was located within the USPS Engineering Facility at Merrifield, VA and had been very recently refurbished to field equipment specifications. The ink jet cancellation equipment on this machine is currently deployed at the Northern Virginia P&DC and many other sites across the nation.

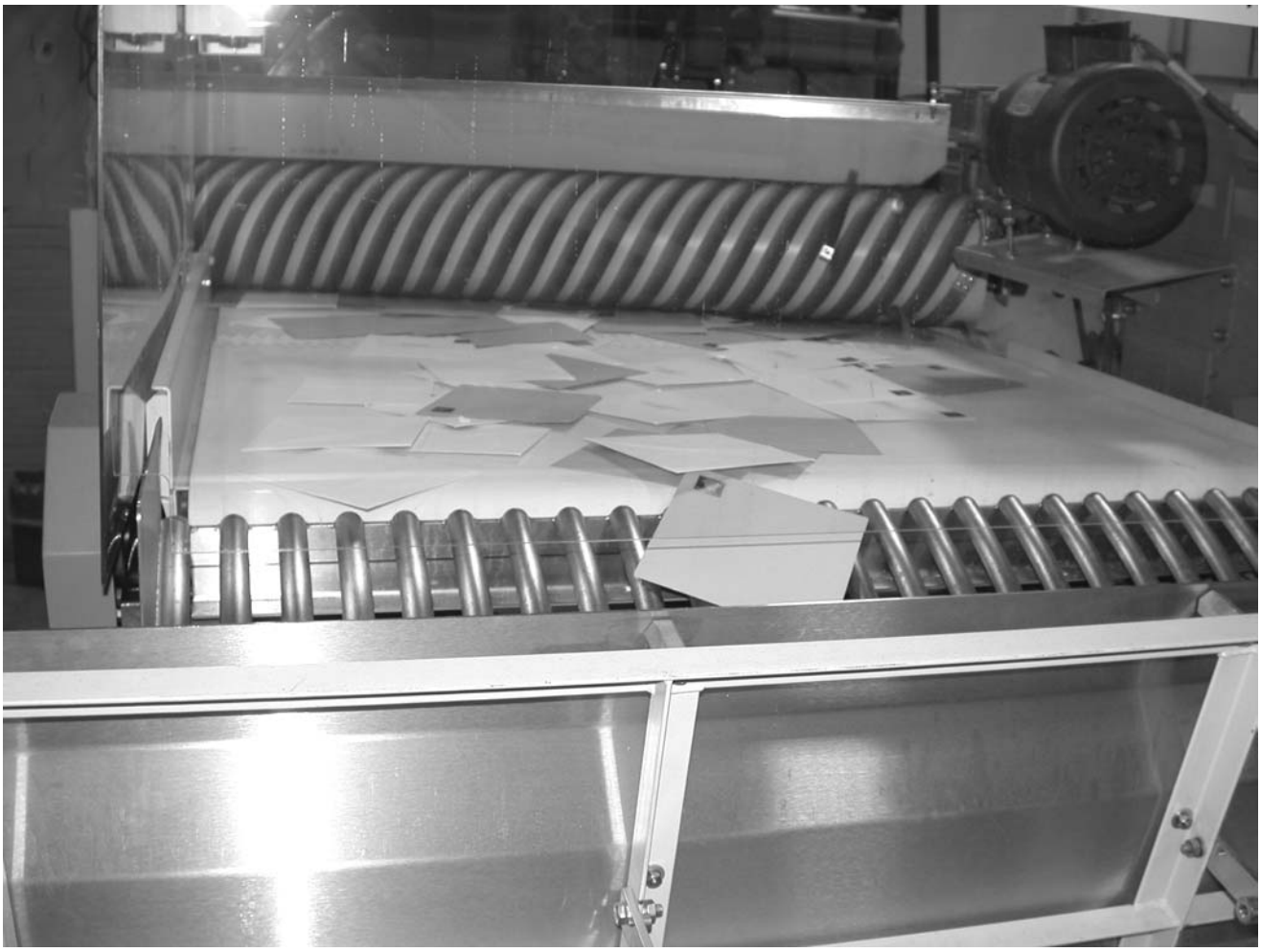

Image 3 – Square samples being accepted as automation compatible letter mail

Image 3 shows a number of envelopes that have successfully bypassed an over-size, over-weight culling operation. All of the GCA samples reached this point and continued on to be processed as letter mail.

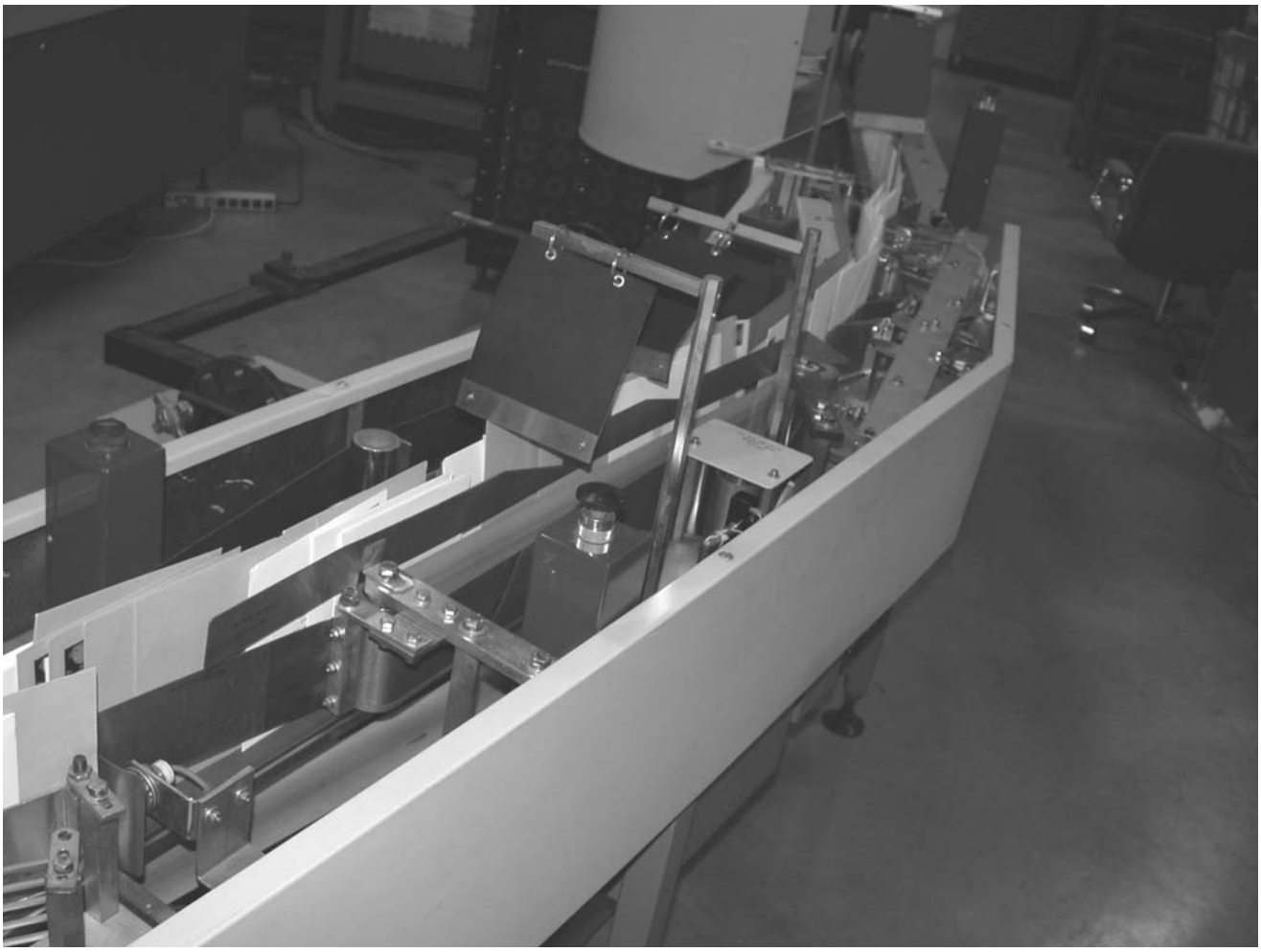

Image 4 – Square samples without a long edge cannot be oriented properly

This image shows the orientation section of the AFCS. It is within this section that mail meeting the aspect ratio requirement is oriented so that either the top or bottom of the mail piece is oriented at the bottom of the feed channel. Square samples, without a long edge, exit this section incorrectly on their right or left edge down as often as they exit correctly oriented, with their top or bottom edge down. Note the two green samples exiting this section with the stamp incorrectly positioned in the upper left corner because the sample is traveling on its left edge.

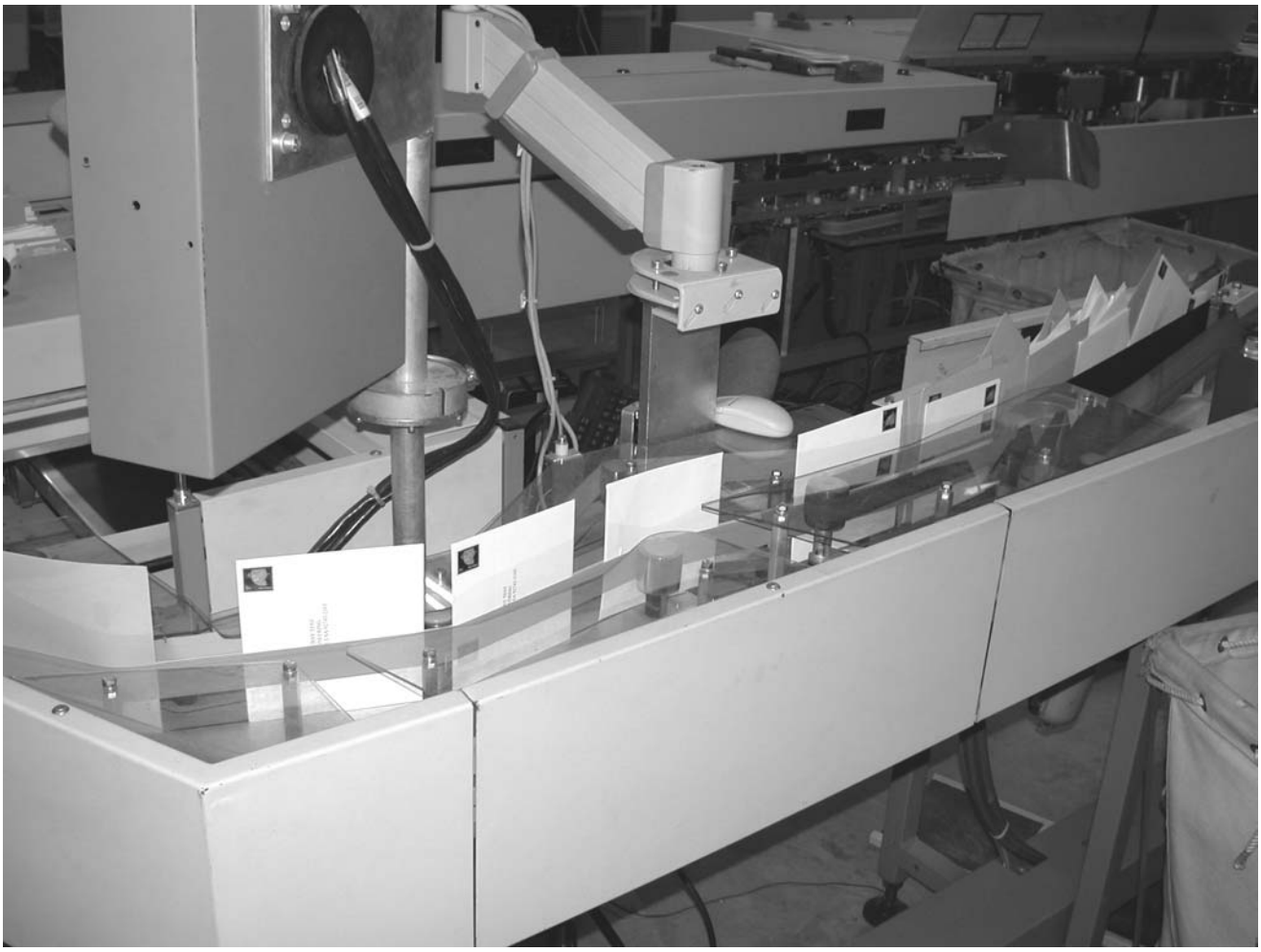

Image 5 – Square samples, in random orientation, approach the feed stacker

Image 5 shows another series of samples with incorrect stamp placement approaching the feed stacker. The two light colored samples on the left will be placed incorrectly in the feed stacker and subsequently inducted into the indicia detection section of the AFCS with the left edge of the sample down. The sample will then be inverted in the indicia detection section so its right edge is down and the opposite face of the sample will be scanned. In both cases, this will result in the failure of the indicia detection process to find a indicia where needs to be in order to sort the sample to either a “stamp leading” or “stamp trailing” output stacker.

The limitation of two stackers for each mail piece type precludes modification of the equipment to recognize indicia on the opposite facing lower corner because doing so would result in mail facing both forward and backwards in the output stackers. The AFCS is the only piece of USPS equipment that currently reads both the front and back of mail.

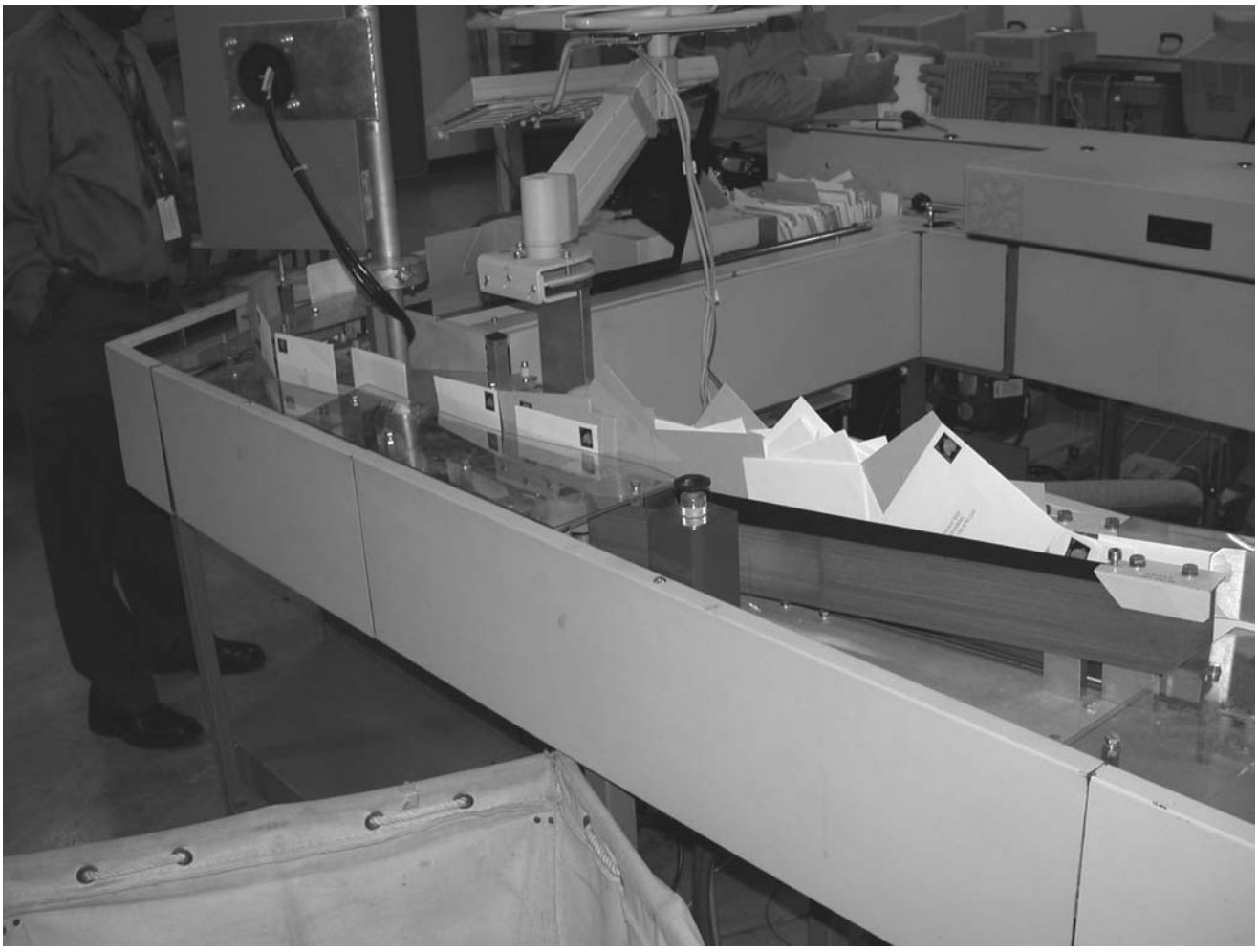

Image 6 – Square samples are prone to rotation in mail transport systems

Image 6 shows the undesirable tendency of the square samples to rotate in the leveling section that is common to the mail transport section of many different types of mail processing equipment. The resultant skew of the samples prior to scanning stations often adversely affects the image, character recognition and address interpretation processes that follow.

Image 7 – Square samples that are over-height are rejected to prevent damage to the mail

This image shows the automatic rejection of over-height mail done to prevent jams and damage. This is done prior to the inversion section of the AFCS where clearances are particularly critical. The green samples shown are 1/8 of an inch over legal height at 6 ¼ inches.

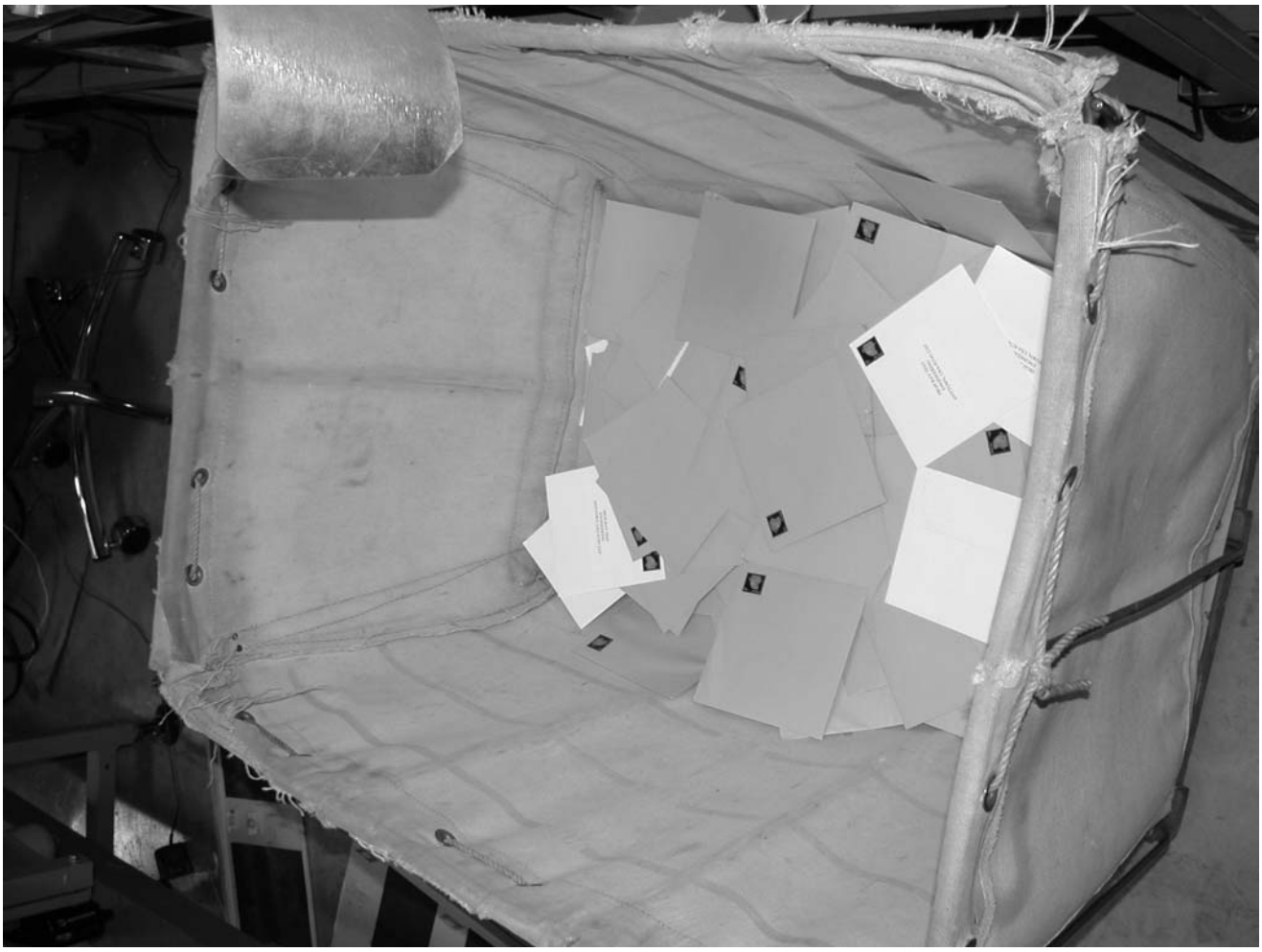

Image 8 – All of the over height pieces are a few legal height samples are culled

Image 8 shows all of the over-height samples and a few legal height samples that were also rejected. Due to earlier rotation, some of the square samples have not been fully leveled and are also rejected because they ride so high in the transport that they trigger the over height detection used to prevent jams. While this can happen with all mail, it is more pronounced with the square samples that fail to level more frequently than mail meeting the aspect ratio requirements.

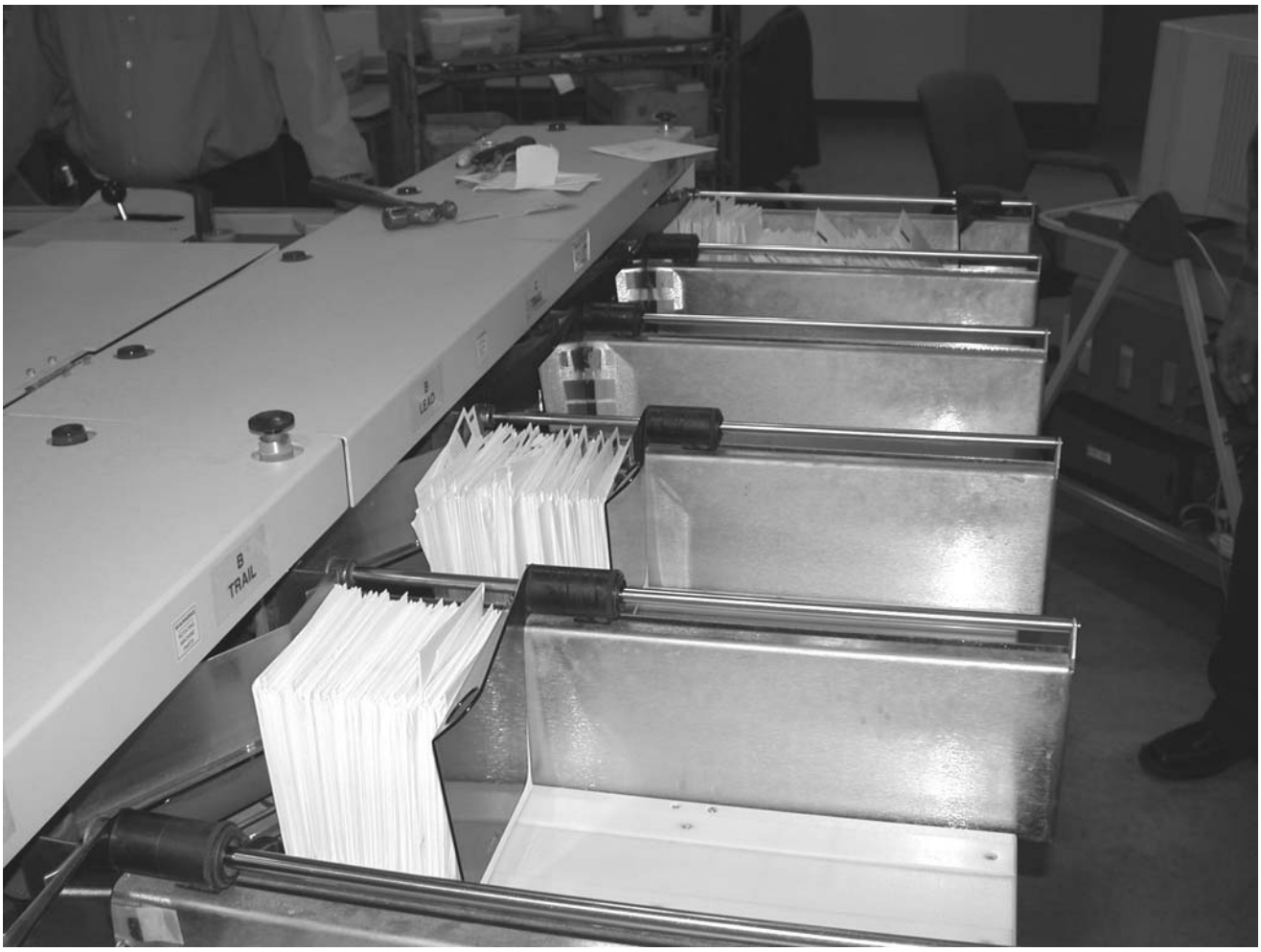

Image 9 – Canceled pieces (bottom two stackers), and not-cancelled samples (top stacker)

Image 9 shows all of the three square samples in the output stackers of the AFCS after they were processed. Note that all of the over-height (green) samples have been culled.

The samples in the two foreground stackers have been correctly canceled. Those in the closest stacker found indicia in the “stamp trailing” position. The next stacker back contains the samples where the indicia was found in the “stamp leading” position. The AFCS can only properly face and cancel the mail that is inducted in one of the four orientations possible with address in a horizontal position.

The last stacker has all the samples that were not cancelled because the indicia could not be detected where it was expected. Specifically, these samples were inducted from the feed stacker on either the left or right edge rather than the top or bottom edge. These samples are removed from the automation mail-stream, thereby incurring significant additional costs.

Image 10 – The not-cancelled stacker has samples with the address positioned vertically

This image shows the samples that were not cancelled – slightly separated for viewing. Some of the samples have the stamp and the address visible and facing outwards. The remaining samples had the stamp and address facing in toward the machine. In all cases, the address was positioned vertically indicating the reason these pieces were not cancelled was improper orientation.

Image 11 – Successful cancellation of "stamp leading" orientation

Image 11 shows all the samples where the indicia was found in the "stamp leading" position. Note that the first sample has managed to rotate after being cancelled.

Image 12 – Successful cancellation of "stamp trailing" orientation

Image 12 shows all the samples where the indicia was found in the "stamp trailing" position.

Image 13 – For all the samples, only the four stacks on the right were correctly processed

Image 13 shows all the square samples in this subset after processing by the AFCS. Only the four groups of envelopes on the right were correctly processed. The four groups of envelopes on the left were mechanical rejects (over-height). The four groups of envelopes in the middle were cancellation rejects (improper orientation).

Image 14 – The four groups of envelopes on the right were correctly cancelled

This image shows the square samples that were correctly processed by the AFCS. As might be expected by the random nature of orientation of the square samples, about half of the cancelled samples were “stamp trailing” (the rightmost column of envelopes). About half of the canceled samples were “stamp leading” (the next to rightmost column of envelopes). Approximately one half of each sample type shown in the leftmost column (type #22 in the front row, type #23 in the back row) was not cancelled due to improper orientation.

Image 15 - Second View, only the four groups on the right were correctly processed

Image 16 is a second view of how the square samples were processed on the AFCS. The leftmost four groups of envelopes were mechanical rejects (over-height). The middle four groups of envelopes were cancellation rejects (indicia could not be found due to improper orientation). The rightmost four groups of envelopes were cancelled without problems. For more detailed results, see the Table 1 at the end of this report.

Greeting Item No.	Card Test Envelope Size	Verified Size	Aspect Ratio	Legal Size	Legal Ratio	Color	Performance Acceptable	Quantity	Reject Mechanical	Reject Cancellation	Weak Ink	Cancelled	Percent Cancelled
Aspect Ratio Samples													
1	3 X 4		1.33	NO	YES		NO	200	200	0	0	0	0.00
2	3-1/16 X 3-1/16		1.00	NO	NO		NO	224	224	0	0	0	0.00
3	3-5/8 X 6-1/2		1.79	YES	YES		YES	200	3	0	0	197	98.50
4	3-3/4 X 6-3/4		1.80	YES	YES		YES	200	0	0	0	200	100.00
5	3-3/4 X 9-3/4		2.60	YES	NO		YES	196	0	0	196	0	100.00
6	3-7/8 X 5		1.29	YES	NO		YES	200	0	0	0	200	100.00
7	4 X 5-3/8		1.34	YES	YES		YES	199	0	0	0	199	100.00
8	4 X 8		2.00	YES	YES		YES	228	0	0	0	228	100.00
9	4 X 9-3/8		2.34	YES	YES		YES	198	0	0	0	198	100.00
10	4-1/8 X 6-1/4		1.52	YES	YES		YES	200	0	0	0	200	100.00
11	4-1/4 X 6-1/8		1.44	YES	YES		YES	202	0	0	0	202	100.00
12	4-1/4 X 9-1/4		2.18	YES	YES		YES	199	0	0	0	199	100.00
13	4-1/4 X 9-1/2		2.24	YES	YES		YES	195	0	0	0	195	100.00
14	4-3/8 X 6-3/4		1.54	YES	YES		YES	196	0	0	0	196	100.00
15	4-1/2 X 8	4 x 8	2.00	YES	YES		YES	330	0	0	0	330	100.00
16	5 X 5		1.00	YES	NO		NO	250	8	145	0	97	38.80
17	5 x 7-1/2		1.50	YES	YES		YES	194	0	0	0	194	100.00
18	5-3/8 X 6-7/8		1.28	YES	NO		YES	198	0	0	0	198	100.00
19	5-3/8 X 8		1.49	YES	YES		YES	197	0	0	0	197	100.00
20	5-1/2 X 5-1/2		1.00	YES	NO		NO	199	0	102	10	87	48.74
21	5-5/8 X 5-5/8	5-1/2 x 5-1/2	1.00	YES	NO		NO	250	3	121	0	126	50.40
22	5-3/4 X 5-3/4		1.00	YES	NO	Beige	NO	250	14	113	1	122	49.20
23	6 X 6		1.00	YES	NO	White	NO	250	4	109	18	119	54.80
24	6-1/4 X 6-1/4		1.00	NO	NO	Green	NO	200	200	0	0	0	0.00
25	6-1/4 X 8-3/4		1.40	NO	YES		NO	203	203	0	0	0	0.00
26	6-1/8 X 9-1/4		1.51	YES	YES		YES	198	2	0	0	196	98.99
27	6-1/2 X 6-1/2		1.00	NO	NO		NO	250	250	0	0	0	0.00
28	6-1/2 X 10		1.54	NO	YES		NO	200	200	0	0	0	0.00
29	6-3/4 X 6-3/4		1.00	NO	NO		NO	262	262	0	0	0	0.00
30	7 X 7		1.00	NO	NO		NO	249	249	0	0	0	0.00
31	7-1/4 X 7-1/4		1.00	NO	NO		NO	225	225	0	0	0	0.00
32	7-1/2 X 7-1/2		1.00	NO	NO		NO	250	250	0	0	0	0.00
33	8-1/4 X 8-1/4		1.00	NO	NO		NO	250	250	0	0	0	0.00
34	8-1/2 X 15-1/2		1.82	NO	YES		NO	200	200	0	0	0	0.00
35	8-7/8 X 12-1/2		1.41	NO	YES		NO	198	198	0	0	0	0.00

Table 1 – Cancellation Rates for GCA Aspect Ratio Samples on AFCS

The green highlighting indicates samples that were processed at an acceptable level of performance, but also had an aspect ratio that is not within the current acceptable range.

Greeting Item No.	Card Test Envelope Size	Verified Size	Aspect Ratio	Legal Size	Legal Ratio	Color	Performance Acceptable	Quantity	Reject Mechanical	Reject Cancellation	Weak Ink	Cancelled	Percent Cancelled
Colored Samples													
36	5-3/4 X 8-1/4		1.43	YES	YES	Green	NO	251	0	251	0	0	0.00
37	5-3/4 X 8-1/4		1.43	YES	YES	Green	NO	278	0	278	0	0	0.00
38	5-3/4 X 8-1/4		1.43	YES	YES	Green	NO	261	0	261	0	0	0.00
39	5-1/4 X 7-1/8		1.36	YES	YES	Green	NO	261	0	261	0	0	0.00
40	5-3/4 X 8-1/4		1.43	YES	YES	Green	NO	245	0	245	0	0	0.00
41	5-3/4 X 8-1/8		1.41	YES	YES	Red	NO	259	0	252	0	7	2.70
42	5-1/4 X 7-1/4		1.38	YES	YES	Red	YES	301	0	1	0	300	99.67
43	5-1/8 X 7-1/4		1.41	YES	YES	Red	NO	267	0	265	0	2	0.75
44	5-3/4 X 8-1/4		1.43	YES	YES	Blue	YES	270	0	0	0	270	100.00
45	5-3/4 X 8-1/4		1.43	YES	YES	Blue	YES	265	0	0	0	265	100.00
46	5-1/8 X 7-1/8		1.39	YES	YES	Blue	YES	201	0	0	0	201	100.00
47	5-1/4 X 7-1/4		1.38	YES	YES	Blue	NO	257	0	254	0	3	1.17
48	5-1/2 X 8-3/4		1.59	YES	YES	Blue	YES	200	0	0	0	200	100.00
49	5-1/8 X 7-1/4		1.41	YES	YES	Blue	YES	288	0	0	0	288	100.00
50	5-1/4 X 7-1/4		1.38	YES	YES	Purple	YES	250	0	0	0	250	100.00
51	5-1/4 X 7-1/4		1.38	YES	YES	Orange	YES	253	0	0	0	253	100.00
52	4-1/8 X 9-1/2		2.30	YES	YES	White	YES	400	0	0	0	400	100.00

Table 2 - Cancellation Rates for GCA Colored Samples on AFCS

Note that most of the darker color envelopes failed to achieve an acceptable level of cancellation.

USPS/GCA-T3-4

(a) Did any of the eight experiment participants listed in GCA-T-3 Appendix A observe the actual postal cancellation and/or processing of the square and rectangular cards utilized in the GCA Square Envelope Test?
(b) If the response to subpart (a) is affirmative, please identify the operations they observed and summarize their observations.

RESPONSE:

(a) GCA Square Envelope Test participants Steve Laserson and Marianne McDermott mailed there test envelopes at Post Offices. They did not observe the actual postal cancellation and/or processing of any of the square and rectangular cards utilized in the GCA Square Envelope Test. GCA Square Envelope Test participant Hamilton Davison told GCA witness Morrissey that he, Davison intended to mail test cards at a Post Office. However, shortly after the test mailing Mr. Davison's company went out of business for financial reasons. GCA has attempted to reach Mr. Davison, but has been unsuccessful in its efforts, so it does not know whether Mr. Davison observed the actual postal cancellation and/or processing of any of the square and rectangular cards utilized in the GCA Square Envelope Test.
(b) See response to subpart (a) above.