USPS-T-25

BEFORE THE
POSTAL RATE COMMISSION
WASHINGTON, D.C. 20268-0001

POSTAL RATE AND FEE CHANGES, 1997

Docket No. R97-1

DIRECT TESTIMONY
OF
PHILIP A. HATFIELD
ON BEHALF OF
UNITED STATES POSTAL SERVICE

TABLE OF CONTENTS

LIST OF EXHIBITS AND APPENDICIES

DIRECT TESTIMONY

OF

PHILIP A. HATFIELD

AUTOBIOGRAPHICAL SKETCH

My name is Philip A. Hatfield. I am a Consultant in the Office of Government Services at Price Waterhouse LLP (hereafter Price Waterhouse) in Arlington, Virginia. I have been with Price Waterhouse since 1994.

My work at Price Waterhouse has been devoted to serving the United States Postal Service and I am an affiliate of Price Waterhouse's Center for Postal Consulting. I have worked on many projects for the United States Postal Service, specializing in cost estimation, rate design analyses, and financial analysis. My experience with the Postal Service includes volume variable cost analysis in transportation and mail processing.

At Price Waterhouse, I have worked on various projects related to mail processing cost estimation. Specifically, I was extensively involved with the preparation of First-Class Mail and Standard Mail letter mail processing cost testimony in Docket No. MC95-1. In that docket I assisted in the development of testimony for both witness Smith (USPS-T-10) and witness Takis (USPS-T-12).

Over the past three years, I have visited a number of Postal Service field offices including airport mail facilities (AMFs), bulk mail centers (BMCs), processing and distribution centers (P&DCs), and associate post offices (AOs). During these visits, I observed transportation cost system (TRACS) tests, transportation operations, mail processing operations, and delivery operations.

I received a bachelor's degree in Economics from the College of William and Mary in 1994.

I. PURPOSE AND SCOPE OF TESTIMONY

The purpose of this testimony is to develop unit mail processing cost estimates for presorted First-Class Mail letters and cards. The mail processing cost estimates developed in this testimony are used in developing rates for First-Class Mail by witness Fronk (USPS-T-32). The current rate structure provides incentives to mailers for avoiding certain mail processing operations which would otherwise be performed by the Postal Service. The mail processing cost estimates developed in this testimony are designed to capture the different costs associated with the various rate categories of mail in order to provide a cost basis for the worksharing discounts. Costs associated with mail other than presorted First-Class Mail letters and cards as well as other functions (delivery, transportation, etc.) are outside the scope of this testimony.

Worksharing discounts in First-Class Mail focus on two areas: barcoding and presorting. Using a mail flow modeling methodology similar to that employed by USPS witnesses Smith and Takis in Docket No. MC95-1[1], this testimony develops unit attributable mail processing costs for the following categories of presorted First-Class Mail letters and cards:

- Nonautomation presort
- Automation basic presort
- Automation 3-digit presort
- Automation 5-digit presort

Mail in each of these categories differs due to barcoding, presorting, or a combination of both. The mail processing cost methodology employed in this testimony determines the cost of each mail processing operation that the different types of mail pass through between the time when mail is deposited with the Postal Service and its arrival at the delivery unit. By virtue of the fact that automation mail avoids mail processing operations incurred by nonautomation mail, and that more finely presorted mail avoids

[1] In Docket No. MC95-1, Mr. Takis testified to the mail processing costs for bulk rate Standard Mail (A) letters (USPS-T-12) and Mr. Smith testified to the mail processing costs for presorted First-Class Mail letters (USPS-T-10).

mail processing operations incurred by less finely presorted mail, the mail processing cost estimates developed in this testimony result in lower costs for rate categories that are associated with higher degrees of worksharing.

The remainder of this testimony is divided into the following sections: a summary of the mail processing cost estimate results, an overview of methodology used to develop unit mail processing costs, a description of the differences between the methodology used in this testimony and that used in Docket No. MC95-1, and a set of appendices that describe the cost calculations and input data in detail. In the summary of results section, the unit mail processing costs developed in this testimony are listed. The overview of the methodology will describe how the cost estimates are developed in general. The next section will specifically detail the changes in the mail processing unit cost development methodology between the time when it was last presented (Docket No. MC95-1) and the current docket. Finally, the appendices show all the detailed calculations for developing the mail processing unit cost estimates. The appendices are organized as follows:

- Appendix I contains the mail processing flow models and associated cost development for each type of mail. In addition, Appendix I shows a significant amount of the input data used to develop the flow models.
- Appendix II shows the First-Class Mail characteristics data that are used extensively in this testimony.
- Appendix III describes the development of bundle sorting costs associated with all types of First-Class presort letter mail that are prepared in bundles.
- Appendix IV describes the development of the entry profiles for the different types of First-Class presort mail. The entry profiles determine where each type of mail receives its first piece distribution operation.
- Appendix V shows a breakdown of the test year total mail processing unit costs for First-Class presort letters and cards. These total unit costs are used to reconcile the mail processing model costs to total test year mail processing costs.

II. SUMMARY OF RESULTS

In the next section of this testimony, the unit mail processing cost development methodology is described in detail. However, for the purposes of describing the results of this testimony, a general overview is necessary. Simply put, the development of mail processing unit costs by rate category is accomplished by de-averaging the CRA-based mail processing unit cost "benchmark." The benchmark is a shape specific, product specific mail processing unit cost that includes all volume variable mail processing costs that are captured in the CRA. Therefore, the benchmarks include all direct and indirect volume variable mail processing costs.

Four benchmarks are used to develop the unit mail processing costs associated with First-Class presort letters and cards. Table II-1 shows the four benchmarks and their respective values.

TABLE II-1.
MAIL PROCESSING COST BENCHMARKS FOR FIRST-CLASS PRESORT[2]

Mail Processing Cost Benchmark	Cost (in cents)
First-Class non-carrier route presort letters	4.6059
First-Class carrier route presort letters	2.2910
First-Class non-carrier route presort cards	3.2597
First-Class carrier route presort cards	0.6204

The purpose of this testimony is to de-average the benchmarks in Table II-1, into the unit mail processing costs associated with each of the different rate categories of First-Class presort mail. Figure II-A shows the relationship between the four benchmarks and the different rate categories of First-Class Mail for which unit costs are estimated.

[2] The benchmarks or mail processing unit costs by shape can be found in USPS LR-H-106.

FIGURE II-A.
BENCHMARK AND RATE CATEGORY RELATIONSHIP

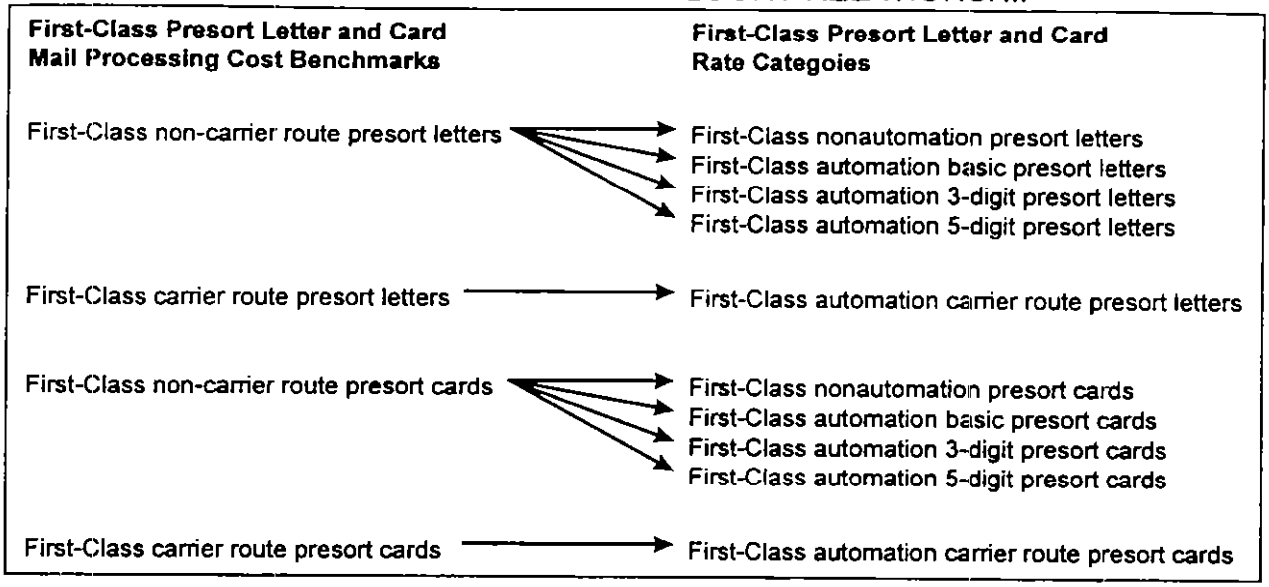


Table II-2 shows the results of the de-averaging of the First-Class presort letter and card benchmarks into the component rate categories. These costs represent the total volume variable mail processing cost incurred by the average piece in each of the rate categories.

TABLE II-2.
TOTAL MAIL PROCESSING UNIT COST RESUTLS[3]

First-Class Rate Category	Cost (in cents)
Nonautomation presort letters	7.1993
Automation basic presort letters	5.3188
Automation 3-digit presort letters	4.5477
Automation 5-digit presort letters	3.0265
Automation carrier route presort letters	2.2910
Nonautomation presort cards	4.7178
Automation basic presort cards	3.4693
Automation 3-digit presort cards	2.9574
Automation 5-digit presort cards	1.9475
Automation carrier route presort cards	0.6204

[3] The results listed in Table II-2 are from Exhibit USPS-25A.

III. OVERVIEW OF MAIL PROCESSING COST DEVELOPMENT

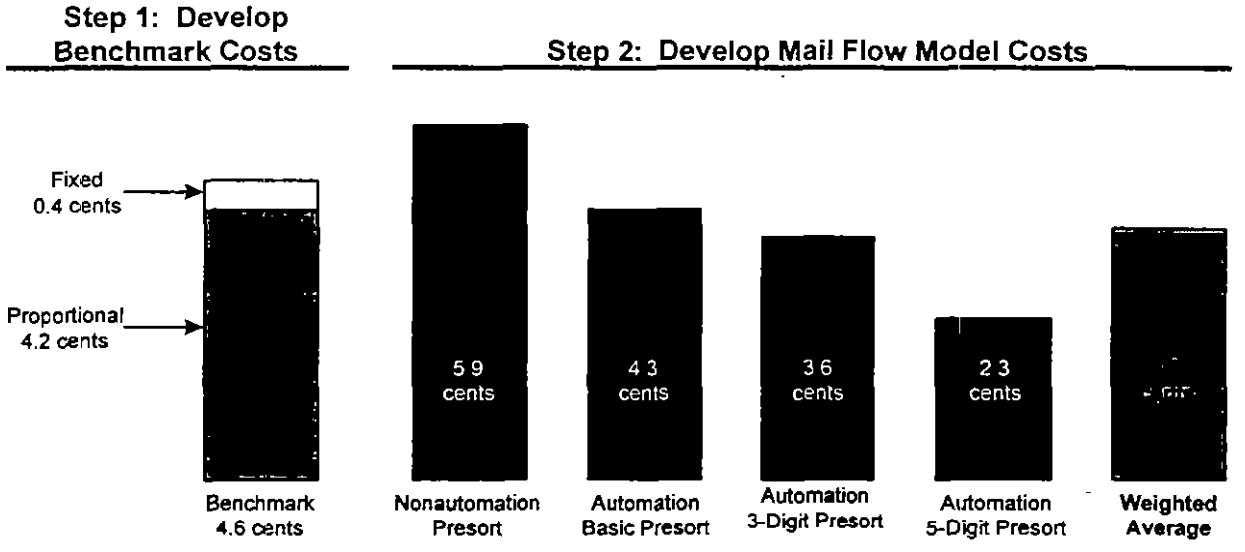
In developing mail processing cost estimates, this testimony employs a methodology similar to that used in developing unit mail processing costs for letter mail in Docket No. MC95-1. The methodology has three general steps that are described in Figure III-A. First, a mail processing unit cost benchmark is developed. Specifically, this testimony uses the First-Class non-carrier route presort benchmark as the basis for developing mail processing costs by rate category. The benchmark cost includes all volume variable mail processing costs that are reflected in the test year cost segments and components. These costs include: piece distribution costs, bundle sorting costs, container handling costs, mail processing overhead costs, rent, capital costs, etc. Benchmark costs are developed on a unit basis and are shape specific. Therefore, the benchmark cost used in this testimony represents the volume variable mail processing costs associated specifically with First-Class non-carrier route presort letters.

Next, this testimony develops models to estimate the costs associated with the shape specific mail processing benchmark costs. The models begin with unit costs by operation. For example, the flow model contains a cost per piece to process a letter across mail processing bar code sorter (BCS) at the outgoing primary level. Once unit costs by operation have been developed, the flow models determine the number and type of operations that an average piece of mail (in a specific rate category) receives. In addition, the models include costs for bundle sorting and bulk mail acceptance. By weighting together the unit costs for each operation, the models yield an average mail processing cost per piece for the average letter in each different rate category.

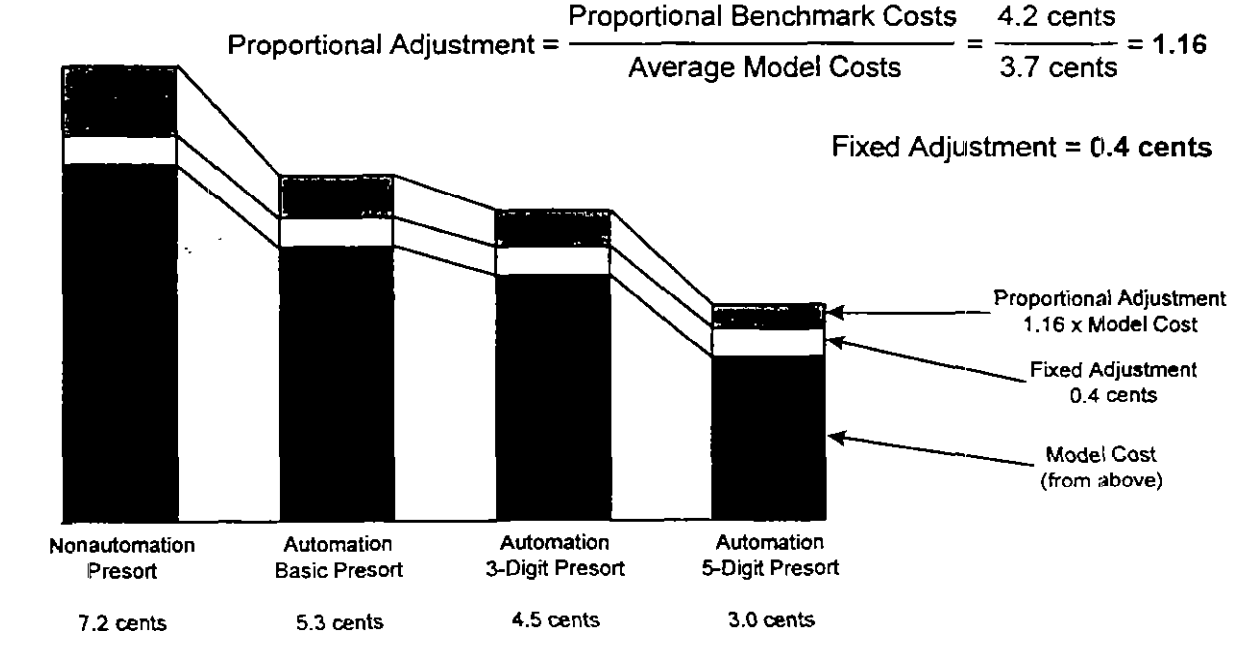
The third and final step in developing mail processing cost estimates is to account for the difference in cost between the benchmark and the models. In Docket No. MC95-1 the costs that reflected the difference between the benchmarks and the model costs were called "non-modeled costs."[4] An adjustment was made to

[4] For a discussion of non-modeled costs and factors, see PRC Op., Docket No. MC95-1, page IV-26-43.

FIGURE III-A:
OVERVIEW OF MAIL PROCESSING COST DEVELOPMENT



Step 3: Develop Total Unit Mail Processing Costs



account for these costs in Docket No. MC95-1 through use of a "non-model cost factor." A new method has been developed to account for non-model costs in this testimony. Specifically, the model costs are adjusted to account for all costs in the benchmark in the following manner. By examining the composition of the benchmark by different cost pools, a determination is made as to whether the costs should be treated as proportional to model costs or fixed. The proportional portion of the benchmark is used to calculate an adjustment factor. This factor is applied to each of the model costs on a proportional basis. The remainder of the benchmark, the fixed portion, is added on to each model cost as a fixed component.

Once the model costs have been adjusted to the benchmark level, the resulting mail processing unit cost estimates reflect the total volume variable mail processing costs associated with each rate category of First-Class presort mail. The resulting unit cost estimates are used in rate making in order to determine the costs avoided by certain worksharing activities. Although this three-step methodology may seem straightforward, its application is complex. The appendices describe the components of this methodology in detail.

IV. CHANGES IN COST DEVELOPMENT METHODOLOGY

As stated above, the methodology employed in this testimony is based on the methodology used in Docket No. MC95-1 by witnesses Smith and Takis. However, there are a number of differences between the mail processing cost estimates from Docket MC95-1 and those produced in this testimony. Because of changes in the CRA mail processing cost calculations, new data from updated field studies, and enhancements to the existing mail processing flow models, several changes have been made to the development of mail processing unit costs for use in rate making. Those changes include:

- Mail processing volume variability and new productivity data
- Mail processing costs by MODS cost pool
- New equipment accept and upgrade rate data
- New First-Class Mail characteristics data
- Changes to mail flow models
- New card cost development methodology

A. MAIL PROCESSING VOLUME VARIABILITY AND NEW PRODUCTIVITY DATA

Until recently, it has been assumed that mail processing costs are 100 percent volume variable for the purposes of rate making. Beginning in this docket, the Postal Service is presenting data that show volume variabilities for certain mail processing operations that are less than 100 percent.[5] This change in mail processing volume variability has an impact on the development of mail processing unit costs in a number of different areas.

First, the change in mail processing volume variabilities affects the level of the mail processing benchmark costs. Because the benchmarks include only volume variable mail processing costs, the level of the benchmarks has fallen considerably

[5] The development of mail processing volume variabilities is described by Dr. Bradley (USPS-T-14).

since Docket No. MC95-1. As stated earlier, the mail processing benchmarks are CRA-based, *i.e.*, they include mail processing costs that are reflected in the test year costs by segment and component. The decreased mail processing variability tends to reduce the amount of mail processing costs allocated to each class and subclass of mail, and therefore, tends to lower the level of the mail processing benchmark costs.

Second, the new mail processing variabilities also affect the development of model costs. Model costs, as described earlier, are a means to de-average the benchmark costs. In order to accurately model the costs that are included in the benchmark, it is necessary to modify the models to incorporate the new mail processing variabilities. This is accomplished primarily through the use of new productivity estimates.

The majority of the productivity estimates used in development of modeled costs are calculated using MODS data. In Docket No. MC95-1, FY 94 MODS data were used to develop productivities. The productivities were calculated by dividing the total number of pieces processed through an operation or group of operations for the year by the total number of workhours associated with the operation or group of operations for the year. For the current docket, the method of calculating productivities is slightly different. First, FY 96 data are used to calculate a base productivity in the exact same manner as was done in Docket No. MC95-1. Next, the base productivity is divided by the percentage volume variability for each operation. In most cases the percentage volume variabilities are less than or equal to one. Therefore, the current productivities calculated using the volume variabilities are higher than or equal to what they would be using the Docket No. MC95-1 methodology.

Incorporating the higher productivity estimates into the models results in lower model costs. The lower model costs reflect mail processing cost estimates that are consistent with the new mail processing cost benchmarks. In the cases where productivity estimates were not calculated using MODS data, a similar adjustment was

made to account for mail processing volume variability.[6] For the most part, wherever MODS data were not available, the productivity estimates used in Docket No. MC95-1 are divided by the appropriate volume variability before they are used in the current models.

B. MAIL PROCESSING COSTS BY MODS COST POOL

In addition to incorporating new mail processing volume variabilities, another change in CRA mail processing cost development was made. Mail processing costs are now grouped into a series of cost pools that are primarily based on MODS operations. The new cost pools allow for examination of mail processing costs at a more detailed level than was previously possible.

With the new cost pool structure, the mail processing benchmark costs can now be subdivided into the unit costs associated with each component cost pool. By categorizing each of the 46 unit costs that comprise the benchmark as either proportional to model related costs or fixed with respect to model related costs, the benchmark is divided into a proportional component and a fixed component. The proportional component represents the mail processing costs that are related to worksharing activities and the fixed component represents costs that are not related to worksharing activities.

In its Docket No. MC95-1 decision, the Commission recommended that the non-model cost factor issue should be revisited in the next omnibus rate case. Specifically at issue was whether or not non-modeled costs should be treated as 100 percent proportional. The Commission agreed with Postal Service witness Smith that "absent any evidence to the contrary, distributing non-model costs in proportion to model costs is reasonable in this case."[7] With the new cost pool methodology, more detailed

---

[6] Adjusting productivities in this manner to account for the mail processing volume variabilities is equivalent to calculating a cost per piece for a given operation with the unadjusted productivity and then multiplying by the appropriate volume variability.

[7] PRC Op., Docket No. MC95-1, page IV-44.

information is now available regarding the composition of benchmark costs. Specifically, since benchmark costs can be broken down into the 46 different cost pools, each cost pool can be evaluated individually to make a determination as to whether or not the costs will vary proportionately with model costs. In the case of First-Class non-carrier route presort mail, the percentage of benchmark costs that are categorized as proportional is 92 percent. This result supports witness Smith's conclusion that "non-model costs are, in fact, presort related and that many of these costs would probably be proportionate to model costs."[8]

C. NEW EQUIPMENT ACCEPT AND UPGRADE RATE DATA

In developing the mail flow models, one set of input data are the automation equipment accept and upgrade rates. In Docket No. MC95-1, the mail flow models used accept and upgrade rate data from a 1993 special study. The mail flow models included in this testimony rely on an update of that 1993 study. In February and March 1997, 48 mail processing facilities were surveyed and recorded data for a two-week period. The data collected were used to calculate the accept, reject, and upgrade rates for the multi-line optical character reader and input sub system (MLOCR ISS) and the mail processing bar code sorter output sub system (MPBCS OSS). During normal mail processing operations, no information is collected with regard to the performance of equipment while processing different types of mail (classes, subclasses, or rate categories). The purpose of the special study was to collect this information for different mail types at a level finer than the rate category level.[9]

The results of this study for two different types of mail are used in developing mail flow models for this testimony: First-Class presort OCR upgradable and First-Class presort non-OCR upgradable. The accept rates for each type of equipment are used to determine how many pieces of mail are successfully sorted on each pass of a

---

[8] PRC Op., Docket No. MC95-1, page IV-44.

[9] The 1997 OCR/RBCS Accept and Upgrade Rates Study is documented in Library Reference USPS LR-H-130.

particular machine. Successfully sorted is defined as being sorted to an accepted stacker and having at least a 5-digit barcode. Upgrade rates are used to determine how much mail receives a barcode that represents the finest depth of sort for that address. Finest depth of sort can mean either a 5-digit, 9-digit, or 11-digit barcode. Certain addresses that receive very large volumes of mail have a dedicated 5-digit ZIP Code. To sort mail to the destination address for these addresses, called 5-digit uniques, all that is needed is a 5-digit barcode. Therefore, the 5-digit barcode represents the finest depth of sort. For the most part, mail pieces require either a 9-digit or 11-digit barcode to be sorted to the destination address. Upgraded mail in the mail flow models developed in this testimony is mail that is able to receive delivery point sequencing on automated equipment.

In addition to accept and upgrade rates, detailed reject information is collected for the MPBCS OSS. Ordinarily, the reject rate for a particular type of machine is simply one minus the accept rate; therefore, there is no need to measure the rejects directly. However, in the case of the MPBCS OSS, rejects can go to a variety of places depending on the reason for the reject. The mail flow models in this testimony are able to route MPBCS OSS rejects to one of four places: MLOCR ISS, MPBCS OSS, letter mail labeling machine (LMLM), and manual. Four different types of MPBCS OSS rejects were measured to support the mail flow models. Accept, upgrade, reject rates for presorted First-Class Mail are shown in Appendix I, page 32.

D. NEW FIRST-CLASS MAIL CHARACTERISTICS DATA

Two types of information used in developing model costs in this testimony rely heavily on how First-Class presort mail is prepared. The entry profiles, which are used to determine the level at which mail receives its first piece distribution operation, rely on the make-up characteristics of First-Class presort mail into bundles and trays. For example, the amount of nonautomation mail in OCR upgradable trays that receives its first piece distribution operation at the incoming primary level is the amount of mail that is in 3-digit presort trays. In addition, for nonautomation mail in non-OCR upgradable

trays, the preparation characteristics of the mail are used to determine the bundle sorting costs associated with that type of mail. For example, 3-digit bundles in ADC trays will receive at least one bundle sort from the ADC level to the 3-digit level.

In Docket No. MC95-1, First-Class Mail characteristics data were used for the development of both the entry profiles and the bundle sorting costs. However, the mail characteristics data used in Docket No. MC95-1 represented the mail entry requirements for First-Class Mail that existed before classification reform. For the post classification reform models in Docket No. MC95-1, estimates were made of how mail entry characteristics would change as a result of classification reform. In order to support the development of cost estimates for this docket, a new mail characteristics study was conducted to collect data in the post classification reform environment.[10]

The data from this new study reflect the changes that were made in First-Class presort mail entry requirements. One major change in entry requirements is that in order to receive automation presort discounts, all mail must be prepared in full trays (no bundles). Prior to classification reform, automation presort mail could be prepared in bundles. With this change, the presort rate that automation mail receives (basic, 3-digit, or 5-digit) is determined by the tray presort level as opposed to the bundle presort level.

Another significant change in First-Class presort mail entry requirements has to do with nonautomation mail preparation. In the post classification reform environment, there are two options for preparing First-Class nonautomation presort mail. If the mail fails certain standards for automation compatibility, it is non-OCR upgradable. Non-OCR upgradable mail is mail that would most likely not be upgraded by an optical character reader (OCR). Mail is classified as non-OCR upgradable for one of two reasons: it is non-machinable or it is non-readable. Non-machinable mail is mail that cannot be run across a piece of automated equipment because of its physical properties. This mail is either too thick, too wide, too tall, not properly tabbed, etc. Non-readable mail is mail that, although machinable, cannot be read by an OCR. Mail can be machinable but not readable because the address is handwritten, the address is

---

[10] The new First-Class Mail Characteristics Study is documented in Library Reference USPS LR-H-105.

not in the OCR read area, there is printing in the barcode area, etc. Mail that is nonautomation but that does not fail either the machinability or readabiltiy requirements is OCR upgradable. Although the nonautomation presort rate applies to both OCR upgradable and non-OCR upgradable mail, the mail entry requirements vary for the two types of mail.

Under classification reform, mail that is non-OCR upgradable must be prepared in bundles following rules similar to the pre-classification reform environment. However, mail that is OCR upgradable can be prepared in full trays without any bundling.[11] The result of this change in the mail entry requirements for nonautomation presort is that there are three distinct types of mail that receive the nonautomation presort rate. First, there is the mail that is prepared in OCR upgradable trays. In order to be prepared in full trays with no bundling, this mail must meet all the OCR upgradable requirements. Second, there is mail in non-OCR upgradable trays that meets the OCR upgradable requirements. Preparing mail in full trays is still an option for mail that meets the OCR upgradable requirements. Therefore, a small percentage of the mail, even though it meets the upgradability requirements, is still prepared in bundles. Finally, the third type of mail within nonautomation presort is the mail prepared in non-OCR trays that fails the requirements of OCR upgradability.

The First-Class Mail characteristics data gathered for use in this docket include all of the changes described above. For automation mail, the data show the breakdown of volume into tray presort level. For nonautomation mail in OCR upgradable trays, the data also show the breakdown of volume by tray presort level. Nonautomation mail in non-OCR trays is treated differently. First, the data for nonautomation mail in non-OCR upgradable trays are split between the mail that failed the OCR upgradability requirements and the mail that did not fail. For each of the two subgroups of mail in non-OCR trays, the data show the distribution of volume by each tray/bundle presort combination. For example, the data not only show how much volume is prepared in

[11] For a description of the preparation requirements of First-Class nonautomation presort mail see DMM M130.3.0.

three-digit trays, they also show how much of the three-digit tray mail is in three-digit bundles and how much is in 5-digit bundles. All First-Class Mail characteristics data used in this testimony are shown in Appendix II.

E. CHANGES TO MAIL FLOW MODELS

In addition to the new data that are available for use in developing First-Class presort mail processing unit costs, a number of changes have been made to the flow models and the development of model costs. Although the methodology used to develop individual model costs in this testimony is similar to that used in Docket No. MC95-1, the number and type of models differs considerably. In Docket No. MC95-1, witnesses Smith and Takis both developed two distinct sets of models: a "pre-reform" set and a "post-reform" set. The purpose of the pre-reform models was to estimate the costs associated with the rate categories of mail that existed prior to implementation of the Docket No. MC95-1 decision. These costs were used to compare against the benchmark and to develop cost adjustment factors in order to reflect the costs associated with non-modeled activities. Post-reform models were used as a basis to calculate mail processing unit costs for the new categories of mail that were created in Docket No. MC95-1.

In the current docket, the benchmark used in this testimony reflects the current categories of mail (post-reform) which are also the categories of mail for which mail processing unit costs are being developed. In this situation, the same set of models are used to develop cost adjustment factors as are used to calculate mail processing unit costs for development of worksharing discounts.

In addition to the number and type of mail processing models, other changes have been made to the individual mail processing cost models that are used in this testimony. Specifically, the models have been modified in four different areas: non-machinable mail is included in the flows, flows from non-automated to automated facilities are accounted for explicitly, a new method of determining acceptance and

verification costs has been used, and letter sorting machine (LSM) costs are no longer included in the models.

1. NON-MACHINABLE MAIL

In Docket No. MC95-1, the portion of First-Class nonautomation presort mail that was non-machinable was not known. This mail, because of its physical characteristics, could only be processed in manual operations. The new First-Class Mail characteristics study, which is used in developing model costs for this docket, provides the percentage of First-Class nonautomation presort mail that failed one or more machinability requirements. Because these data are now available, they have been incorporated into the mail flow models.

As stated above, there are three distinct models used to develop the model costs for nonautomation presort mail: OCR upgradable mail in OCR upgradable trays, OCR upgradable mail in non-OCR upgradable trays, and non-OCR upgradable mail in non-OCR upgradable trays. Of these three types of nonautomation mail, only non-OCR mail in non-OCR trays can include non-machinable mail. Therefore, the only model that has been modified to account for non-machinable mail is the non-OCR mail in non-OCR trays model. The non-machinable mail is accounted for in two separate elements of model cost development: the entry profile and the flow model.

In the development of the entry profile for the non-OCR mail in non-OCR trays model, the percentage of non-machinable mail is used to shift mail from automation to manual equipment. First, the amount of mail that enters at each sort level is determined using the mail preparation characteristics. Second, that mail is divided between automated and non-automated facilities based on automation coverage factors. Third, the portion of the mail at automated facilities that is non-machinable is separated. Then, in the flow model, the non-machinable mail at automated facilities, along with the mail at non-automated facilities, is entered on manual operations. The non-machinable mail is always processed on manual operations, without ever having the opportunity to flow to an automated operation.

The effect of including non-machinable mail in the development of model costs is to increase the cost of processing nonautomation mail. Approximately 25 percent of First-Class nonautomation presort mail is non-machinable. By ensuring that this mail is always processed in manual operations in the flow models, the model costs more accurately reflect the true costs of processing nonautomation presort mail.

2. MANUAL TO AUTOMATION FLOWS

Another modification that was made to the First-Class presort flow models was to account explicitly for mail that flows from non-automated facilities to automated facilities. In Docket No. MC95-1, the First-Class presort mail flow models showed a portion of mail flowing from automated equipment to mechanized and manual equipment even though the mail was not rejected by the automated equipment. This automated to manual flow reflected the fact that more mail enters the processing stream at automated facilities than destinates at automated processing facilities. In fact, a coverage factor was used to calculate the percentage of mail that flowed from automated to manual operations because it destinated at non-automated facilities. The coverage factor used in Docket No. MC95-1 actually represented a net automated to manual flow that was composed of two different types of flows: automated to manual and manual to automated. Just as some mail originates at an automated site and destinates at a non-automated site, a smaller portion of mail originates at a non-automated facility and destinates at an automated one. The automated to manual coverage factor used in Docket No. MC95-1 represented the net automated to manual flow for First-Class Mail. In this testimony, the two different flows are accounted for explicitly.

In each of the models that show both origin and destination processing, new flows have been added from two origin manual operations (OP and ADC/AADC) to each of the destination automated operations (SCF, IP, and IS). The only mail that is eligible to travel along these new flows is the portion of mail that enters the model in a manual operation because it is at a non-automated site.

3. ACCEPTANCE COSTS

The next change to the mail flow models that will be discussed here is the development of acceptance and verification costs for presort mail. In Docket No. MC95-1, witnesses Smith and Takis both relied on the same estimate of acceptance and verification costs for First-Class and third-class presort mail. The estimate was from USPS witness Callies in Docket No. R90-1.[12] As a result of the development of mail processing costs by MODS cost pool, an improved estimate of the unit costs associated with acceptance and verification is available.

One of the MODS cost pools used to develop mail processing costs is labor distribution code (LDC) 79. LDC 79 is for mailing requirements and business mail entry. The unit costs for LDC 79 are used directly in the models.

4. LETTER SORTING MACHINE COSTS

One last modification to the mail flow models that will be discussed here is the removal of letter sorting machine (LSM) costs from the mail flow models. Letter sorting machines are currently being phased out of Postal Service processing and distribution centers across the United States. In fact, the Postal Service has already removed over 75 percent of LSMs. Going forward, the Postal Service intends to reduce LSM processing equipment in automated facilities as much as is operationally feasible.[13] As a result, the test year mail processing cost models in this testimony do not include any LSM processing costs. Instead, mail that is rejected from automated equipment is sent directly to manual processing.

[12] Docket No. R90-1, Exhibit USPS-T-14B at 1.
[13] For a discussion of the phase out of LSMs, see USPS-T-4.

F. NEW CARD COST DEVELOPMENT METHODOLOGY

This testimony includes a methodology for determining the mail processing cost associated with First-Class presort cards that is slightly different from the methodology employed by witness Smith in Docket No. MC95-1. In Docket No. MC95-1, Mr. Smith developed a card/letter difference that was based primarily on the difference between the First-Class non-carrier route presort card and letter mail processing benchmarks. This card/letter difference was then subtracted from the total model costs for each rate category of letters in order to obtain total card mail processing costs. One result of subtracting the same card/letter difference from each letter rate category was that the cost differences between rate categories for cards were the same as the cost differences in letters.

In this testimony, the development of card costs has been modified. On average, a card will cost less to process through a single mail processing operation than a letter. This is due to the fact that cards are smaller and lighter than letters and generally will have a higher productivity and require less sweeping in mail processing operations. If a card costs less than a letter through one mail processing operation, then the cost difference between letters and cards should grow with the number of mail processing operations. Therefore, for rate categories with less worksharing (*i.e.*, the mail passes through more mail processing operations) the difference between letter and card mail processing costs will be higher than in rate categories with less worksharing.

The methodology used in this testimony to develop card mail processing unit costs is a three step process. First, a card/letter ratio is developed. The card/letter ratio is calculated by dividing the First-Class non-carrier route presort card mail processing cost benchmark by the First-Class non-carrier route presort letter mail processing cost benchmark. Second, this ratio is applied to the model costs for First-Class letters in each rate category (nonautomation, automation basic, automation 3-digit, and automation 5-digit). The results are the modeled costs for First-Class cards by rate category. The third and final step is to apply a proportional and a fixed adjustment to the card model costs in order to reconcile them with the card benchmark.

Development of the proportional and fixed adjustments for cards is exactly the same as for letters. The card model costs are weighted together using test year volumes. Next, the proportional benchmark costs are divided by the weighted average model cost to get the proportional adjustment. Then the model costs by rate category are multiplied by the proportional adjustment and the fixed adjustment is added to that product. The result is the total unit mail processing costs for First-Class non-carrier route presort cards by rate category. The mail processing costs for First-Class carrier route presort cards come from directly from the benchmark.

Exhibit USPS-25A

First-Class Mail Processing Cost Summary

Exhibit A: First-Class Mail Processing Cost Summary

Calculation of Total Mail Processing Costs

First-Class Letters

	[1] Model Cost	[2] Proportional Adjustment	[3] Fixed Adjustment	[4] Total Cost
Nonautomation presort	5.9053	1.1586	0.3573	7.1993
Automation basic presort	4.2822	1.1586	0.3573	5.3188
Automation 3-digit presort	3.6167	1.1586	0.3573	4.5477
Automation 5-digit presort	2.3038	1.1586	0.3573	3.0265
Automation carrier route presort				2.2910 1/

First-Class Cards

	[5] Model Cost	[6] Proportional Adjustment	[7] Fixed Adjustment	[8] Total Cost
Nonautomation presort	4.1793	1.0869	0.1754	4.7178
Automation basic presort	3.0306	1.0869	0.1754	3.4693
Automation 3-digit presort	2.5596	1.0869	0.1754	2.9574
Automation 5-digit presort	1.6304	1.0869	0.1754	1.9475
Automation carrier route presort				0.6204 2/

Row 1/: Exhibit USPS-25A, page 2 of 3, row 4.
Row 2/: Exhibit USPS-25A, page 3 of 3, row 5.
Column [1]: Exhibit USPS-25A, page 2 of 3, column 5.
Column [2]: Exhibit USPS-25A, page 2 of 3, row 8.
Column [3]: Exhibit USPS-25A, page 2 of 3, row 9.
Column [4]: Column 1 * column 2 + column 3.
Column [5]: Exhibit USPS-25A, page 3 of 3, column 2.
Column [6]: Exhibit USPS-25A, page 3 of 3, row 9.
Column [7]: Exhibit USPS-25A, page 3 of 3, row 10.
Column [8]: Column 6 * column 7 + column 8.

Exhibit A: First-Class Mail Processing Cost Summary

Summary of First-Class Letter Costs

CRA Costs by Shape

First-Class non-carrier route presort - proportional	4.2486	1/
First-Class non-carrier route presort - fixed	0.3573	2/
Total First-Class non-carrier route presort	**4.6059**	3/
Total First-Class carrier route presort	**2.2910**	4/

Development of CRA Adjustment Factor

	[1] Model	[2]	[3] Weighted	[4]
Nonautomation Presort Costs	**Cost**	**Weight**	**Cost**	**% DPS**
OCR Mail in OCR Trays	5.2952	48.26%	2.5555	60.86%
OCR Mail in Non-OCR Trays	5.1958	7.73%	0.4019	60.70%
Non-OCR Mail in Non-OCR Trays	6.6992	44.00%	2.9479	26.25%
Total		**100.00%**	**5.9053**	**45.62%**

	[5] Model	[6] TY BR	[7] Total	[8]
All Non-CR Presort	**Cost**	**Volume**	**Cost**	**% DPS**
Nonautomation	5.9053	4,994,580	$29,494,485	45.62%
Automation Basic	4.2822	4,284,955	$18,349,134	64.08%
Automation 3-Digit	3.6167	20,642,552	$74,658,013	66.23%
Automation 5-Digit	2.3038	9,375,320	$21,598,686	69.71%
Total	**3.6669** 5/	**39,297,407** 6/	**$144,100,318** 7/	**64.20%**

First-Class non-carrier route presort letter proportional adjustment	**1.1586**	8/
First-Class non-carrier route presort letter fixed adjustment	**0.3573**	9/

Row 1/: Appendix V, page 3 of 4, sum of column 4.
Row 2/: Appendix V, page 3 of 4, sum of column 5.
Row 3/: Row 1 + row 2.
Row 4/: USPS LR-H-106.
Row 5/: Weighted average First-Class non-carrier route presort model cost (row 7 / row 6).
Row 6/: Total test year before rates First-Class non-carrier route presort letter volume (sum of column 6).
Row 7/: Total test year before rates First-Class non-carrier route presort letter model cost (sum of column 7).
Row 8/: Row 1 / row 5.
Row 9/: Row 2.
Column [1]: Model costs are from Appendix I, pages 21, 25, and 29, respectively.
Column [2]: Weights are from Appendix II, page 6 of 6, rows 14, 15, and 16.
Column [3]: Column 1 * column 2.
Column [4]: DPS percentages are from Appendix I, pages 21, 25, and 29, respectively.
Column [5]: Nonautomation model cost is from column 3, automation model costs are from Appendix I, pages 14, 16, and 18, respectively.
Column [6]: Test year before rates volumes by rate categroy and shape are from USPS LR-H-129.
Column [7]: Column 5 * column 6.
Column [8]: Nonautomation DPS percentage is from column 4, automation DPS percentages are from Appendix I, pages 14, 16, and 18.

Exhibit A: First-Class Mail Processing Cost Summary

Summary of First-Class Card Costs

CRA Costs by Shape	
First-Class non-carrier route presort - proportional	3.0843 1/
First-Class non-carrier route presort - fixed	0.1754 2/
Total First-Class non-carrier route presort	**3.2597** 3/
Card / Letter CRA Cost Ratio	**0.7077** 4/
Total First-Class carrier route presort	**0.6204** 5/

Development of CRA Adjustment Factor

	[1]	[2]	[3]	[4]	[5]
All Non-CR Presort	**Letter Model Cost**	**Card Model Cost**	**Volume**	**Total Cost**	**% DPS**
Nonautomation	5.9053	4.1793	643,730	$2,690,355	45.62%
Automation Basic	4.2822	3.0306	349,960	$1,060,600	64.08%
Automation 3-Digit	3.6167	2.5596	844,530	$2,161,684	66.23%
Automation 5-Digit	2.3038	1.6304	576,610	$940,129	69.71%
Total	**3.6669**	**2.8378** 6/	**2,414,830** 7/	**$6,852,768** 8/	**61.25%**

First-Class non-carrier route presort card proportional adjustment	**1.0869** 9/
First-Class non-carrier route presort card fixed adjustment	**0.1754** 10/

Row 1/: Appendix V, page 4 of 4, sum of column 4.
Row 2/: Appendix V, page 4 of 4, sum of column 5.
Row 3/: Row 1 + row 2.
Row 4/: Row 3 / total CRA letter unit mail processing cost (Exhibit USPS-25A, page 2 of 3, row 3).
Row 5/: USPS LR-H-106.
Row 6/: Weighted average First-Class non-carrier route presort card model cost (row 8 / row 7).
Row 7/: Total test year before rates First-Class non-carrier route presort card volume (sum of column 3).
Row 8/: Total test year before rates First-Class non-carrier route presort card model cost (sum of column 4).
Row 9/: Row 1 / row 6.
Row 10/: Row 2.
Column [1]: Exhibit USPS-25A, page 2 of 3, column 5.
Column [2]: Column 1 * row 4.
Column [3]: Test year before rates volumes by rate category and shape are from USPS LR-H-129.
Column [4]: Column 2 * column 3.
Column [5]: Exhibit USPS-25A, page 2 of 3, column 8.

USPS-T-25
Appendix I

Development of First-Class Mail Processing Model Unit Costs

I. INTRODUCTION

The purpose of Appendix I is to describe the calculations used to develop model costs for each of the rate categories included in First-Class non-carrier route presort. Those rate categories include:

- Nonautomation presort
- Automation basic presort
- Automation 3-digit presort
- Automation 5-digit presort

In addition, Appendix I uses three separate mail flow models to develop a single model cost for nonautomation presort. Three models are necessary to calculate costs for nonautomation presort because nonautomation presort mail is comprised of three distinct types of mail, each of which have different cost characteristics:

- OCR upgradable mail in OCR upgradable trays
- OCR upgradable mail in non-OCR upgradable trays
- Non-OCR upgradable mail in non-OCR upgradable trays

The remainder of this appendix is divided into three sections: cost summary sheets, mail flow models, and input data. The cost summary sheets section describes how model costs are actually calculated using the mix of handlings from the flow model and other input data. The mail flow model sections will go over the methods used to develop the mail flow models. Finally, the input data section will describe the input data shown and used in Appendix I.

II. COST SUMMARY SHEETS

Each of the six mail flow models contained in this appendix is comprised of two primary parts: the flow model and the cost summary sheet. The flow model is used to determine the mix of handlings for each type of mail. Mix of handlings will be described in the next section. Cost summary sheets are where the mix of handling data are

combined with unit costs by operation to develop an average model cost for each type of mail. Therefore, on the cost summary sheets, two main calculations are being made: (1) a unit cost for every mail processing operation is being calculated and (2) the unit costs by operation are weighted together to get an average cost for the given mail type.

Calculating a unit cost for each mail processing operation takes four different pieces of input data. The calculation begins with a productivity[1] for each operation. Productivities are listed in column 2 of each of the cost summary sheets and are displayed in pieces per hour. The productivities come from a number of sources including: MODS, special studies, and engineering estimates. Next, the test year clerk and mail handler wage rate is divided by the adjusted productivity for each operation. Wage rates are listed in column 3 of each cost summary page and are displayed in dollars per hour. Two different wage rates are used in the calculation of mail processing model costs. The majority of operations receive the clerk and mailhandler non-RBCS wage rate; however, the unit costs for all RBCS operations are calculated using a RBCS specific clerk and mailhandler wage rate. The result of the division is shown in column 4 of each cost summary page and represents the direct labor unadjusted cost per piece for each operation in cents per piece.

Two adjustments are made to the direct labor unadjusted cost per piece. First, the cost is multiplied by a piggyback factor to account for indirect labor costs. The operation specific piggyback factors are shown in column 5 of each cost summary sheet. Next, the direct labor unadjusted cost from column 4 is multiplied by one minus the First-Class presort premium pay adjustment. The result of this calculation is the cost adjustment for First-Class presort to account for the fact that First-Class Mail is preferential and receives a higher priority on mail processing equipment than certain other classes and subclasses of mail. The premium pay adjustment for each operation is shown in column 6 of each cost summary sheet. Finally, the direct and indirect labor

[1] The producitivies used in this calculation are adjusted for mail processing volume variability as discussed on pages 8-9 of this testimony.

costs for each operation (column 4 multiplied by column 5) is added to the premium pay adjustment (column 6) to yield the total unit cost by operation in column 7.

The total unit cost by operation represents the cost of processing one piece of mail across a given operation. However, for each type of mail that is modeled in this appendix, several operations are required to get the average piece of mail processed from origin through to destination. In order to determine the number and mix of handlings incurred by the average piece of mail, the mail flow model is used. The results of the mail flow model are shown in column 1 of the cost summary page. The numbers in column 1 represent the number of pieces (out of a hypothetical 10,000 average pieces) that receive each of the mail processing operations. The final step in calculating a model cost is to weight the unit costs by operation. This is accomplished by multiplying the total unit cost by operation (column 7) by the mix of handlings (column 1) and dividing by 10,000. The resulting weighted unit cost by operation is shown in column 8. Finally, the weighted unit costs by operation are aggregated over all operations to yield the average model cost for each mail type. The average model cost is shown in row 3 (see note 3/) of each cost summary page.

In addition to the standard set of mail processing operations for each sort level, there are three other pieces of information included on the cost summary sheets. First, acceptance and verification costs are included on each cost summary sheet because each type of presorted First-Class Mail must go through acceptance and verification operations.[2] The acceptance and verification costs are shown in row 1 (see note 1/) of each cost summary page. The costs come from the breakdown of the mail processing benchmark costs into the component cost pools shown in Appendix V. Specifically, acceptance and verification costs are taken from the LDC 79 cost pool.

Another calculation that is included on each cost summary sheet is the delivery point sequencing (DPS) percentage. For each type of mail modeled in this testimony, a certain amount of the mail is processed successfully through automated DPS

[2] See page 18 of this testimony for a discussion of the acceptance and verification costs.

operations. This mail must have a barcode representing the finest depth of sort for the address, must be destinating at an automated facility, must be destinating at an automated incoming secondary zone, and must be destinating at a DPS zone. If all of these criteria are met and a piece has not been rejected from automated processing, then it will be delivery point sequenced when the mail reaches the carrier. This information is important for the determination of delivery costs for the different rate categories of First-Class presort mail. The percentage shown in row 2 (see note 2/) of each cost summary sheet is calculated using information from the flow model. Specifically, it is the amount of mail that is accepted on the second DPS pass on a delivery bar code sorter (DBCS) and the amount of mail that is accepted on the third DPS pass on a carrier sequence bar code sorter (CSBCS) all divided by 10,000.

Finally, on both nonautomation models for mail in non-OCR upgradable trays, the cost summary sheets show a bundle sorting cost. This is because mail that is prepared in non-OCR upgradable trays must be prepared in bundles and therefore receives some bundle sorting operations before it is available for piece distribution in the flow models. Bundle sorting costs are calculated for the average piece in Appendix III. Because they represent the bundle sorting costs for the average piece within each model type, they are added to the cost summary sheets (see note 4/) with a value of 10,000 in the mix of handlings column. Again, a value of 10,000 has the effect of adding the bundle sorting cost to the average cost per piece for the mail type.

III. MAIL FLOW MODELS

Each cost summary page in this appendix is followed by one or two pages that show a graphical representation of mail processing operations. These flow models are used to calculate the mix of handlings that were described in the previous section. Calculating the mix of handlings in some cases is rather complicated; however, development of flow models are based several straightforward principles.

Each box on the flow model represents a different mail processing operation. As stated earlier, unique mail processing piece distribution operations in this testimony are defined by both equipment type and sort level. The flow is organized with different types of machines across the page from left to right and different sort levels from top to bottom. In general, automated equipment is on the left-hand side of each flow model and manual is on the right. The outgoing sort levels are pictured at the top of the model and the incoming towards the bottom. Every line on the model represents a flow between two mail processing operations on which mail can move.

Every flow model begins with a hypothetical 10,000 mail pieces at the top of the model. The number of pieces passed through the flow model is actually irrelevant because it is only the relative proportion of mail pieces that pass through each operation that determines the mix of handlings. However, choosing the number 10,000 allows for easier interpretation of the results. The first step in calculating the mix of handlings for a particular type of mail is to determine the operation at which each of the 10,000 pieces receive their first piece distribution operation. This is called the entry profile of the mail and it is calculated for each type of mail in Appendix IV. Generally, the entry profile is determined by two factors: the container or bundle presort level and the automation coverage factors. For example, automation basic mail in a mixed AADC tray will enter on the outgoing primary (OP) BCS if it is at an automated facility or it will enter on the OP manual operation if it is not at an automated facility. The lines that flow from the rectangular box than runs across the top of the flow model downward into piece distribution operations describe how the 10,000 pieces enter into piece distribution operations.

Once in a piece distribution operation, the flow model calculates how the mail will flow through the progressive sort levels until it reaches the final stages of mail processing. A number of factors affect how mail will flow from one operation to the next. Those factors include: accept rates, upgrade rates, mailflow densities, and coverage factors. Although the calculations involved in determining the mix of handlings can be complex, the logic used to decide how mail flows between operations

is relatively straightforward. As an example, I will describe how mail flows out of an OP BCS operation in the automation basic flow model. The first decision point is whether the mail is accepted or rejected by the BCS. By applying the accept rate to the total amount of mail in the OP BCS operation, the number of pieces that are accepted in that operation is determined. As a general rule, accepted pieces will flow to BCS operations at successive sort levels. For the accepted pieces, the next BCS operation is determined by the mailflow densities. The mailflow densities for an OP BCS indicate the percentage of mail that flows to each successive BCS sort level: outgoing secondary (OS), automated area distribution center (AADC), sectional center facility (SCF), incoming primary (IP), and incoming secondary (IS). Therefore the amount of mail that flows from the OP BCS to the OS BCS is the OP BCS total multiplied by the OP BCS accept rate multiplied by the BCS OP to OS mailflow density. For the mail that is not accepted on the OP BCS, all of it will flow to the OP manual operation. This amount is calculated by multiplying the OP BCS total by one minus the OP BCS accept rate.

These rules apply to all piece distribution operations; however, they become more complex as other factors are accounted for in the flows. For example, mail that flows from an outgoing sort level BCS to an incoming sort level is subject to an additional factor. By virtue of the fact that mail is on a BCS at an outgoing sort level, that mail is being processed at an origin processing and distribution center (P&DC) that has automated equipment. A small portion of that mail will flow to a destination P&DC that does not have automated equipment. Therefore, even though the mail may have been accepted by a BCS at the outgoing sort level, it cannot receive BCS processing at the destination facility because that facility is not equipped with bar code sorters. The model accounts for this mail with a series of flows from outgoing automated operations to destination manual operations. These are represented by flows that break from the far left-hand side of the flow model across the page to the right-hand side and into the manual operations at incoming sort levels.

Another complicating factor in determining mail flows is associated with the incoming secondary sort level. Even though mail is accepted at BCS operations up stream, it may not flow to a BCS operation at IS. This is due to the fact that mail destined for certain IS zones that have a small number of carriers (four or less) does not receive an IS sort at the destination P&DC. Rather, this mail is sorted to the 5-digit level and is generally dispatched to the post office where it will receive a manual IS operation.

The situation is even more complex for nonautomation mail. In the nonautomation flow models, since the mail is not prebarcoded, a large portion of the mail will receive RBCS processing. RBCS processing was added to the flow models in Docket No. MC95-1 and has also been included in the models in this docket. RBCS processing involves the addition of a number of operations to the flow models, including: image processing, BCS OSS, and LMLM. Therefore, if mail is not barcoded by the OCR at a given sort level, it has the opportunity to be processed through the RBCS operations before is flows down to successive sort levels.

By using the data collected on mail flows (accept rates, upgrade rates, mailflow densities, and coverage factors), each flow model uses a similar set of rules to determine how mail is processed through piece distribution operations from origin to destination. Once this is accomplished, the mix of handlings for a particular type of mail is extracted from the flow model. The mix of handlings is the total number of pieces that are processed in each operation. The cost summary sheets described earlier pull these totals from the flow model and use them to weight the appropriate unit cost for each operation.

III. INPUT DATA

As mentioned several times, a significant amount of data is required to develop model costs. The cost summary sheets use productivities, wage rates, piggyback

factors, and premium pay adjustments.[3] The mail flow models rely on accept and upgrade rates, mailflow densities, and coverage factors.[4] This section of the appendix will briefly discuss each of the types of input data used in the calculation of piece distribution model costs.

A. PRODUCTIVITIES

The productivities used in the development of unit costs by operation on the cost summary sheets come from a variety of sources and are shown on page 32 of this appendix. For most operations, the productivities are calculated using FY 96 MODS data. Those operations include:[5]

- MLOCR
- MPBCS
- MPBCS-OSS
- DBCS
- LMLM
- manual (except IS at non-automated sites)

For each of the operations described above, the productivity is calculated by dividing the total pieces fed in each operation by the total workhours logged into each operation. Then, each productivity is divided by a volume variability. As described on pages 8-10 of this testimony, the mail processing volume variabilities are incorporated into the development of model costs by adjusting the productivities. Because most of the operation specific volume variabilities is less than or equal to one, the volume variability adjustment has the effect of increasing the productivity estimates used on the cost summary sheets.

---

[3] The cost summary sheets also use inputs from bundle sorting cost calculations which are described in detail in Appendix III.

[4] The mail flow models also rely on inputs from entry profile calculations which are described in detail in Appendix IV.

[5] Productivity estimates for these operations can be found in Library Reference USPS LR-H-113.

A number of productivities cannot be calculated by using MODS data and therefore have come from different sources. The RBCS productivity was calculated in a special study.[6] The CSBCS productivity was taken from the engineering estimate used in Docket No. MC95-1 and modified in two ways. First, the productivity was adjusted by a factor of 0.85 to account for break time and other overhead that was not included in the original engineering estimate. Second, the productivity was divided by the BCS volume variability factor to account for the new mail processing volume variability. The post office box sorting productivities were also taken from Docket No. MC95-1 and adjusted for mail processing volume variability. One final productivity that did not come from FY 96 MODS data is the manual IS productivity at non-automated facilities. Because the flow models make a distinction between manual IS operation at automated and non-automated facilities, it is necessary to have a separate productivity. Because most MODS facilities in FY 96 are automated, the MODS manual IS productivity is used for operations at automated facilities. For manual IS at non-automated facilities, the productivity is taken from Docket No. MC95-1 and adjusted for volume variability. In Docket No. MC95-1, FY 94 MODS data from non-automated sites were used to calculate this productivity because, at that time, some MODS facilities were not automated.

B. WAGE RATES

The test year clerk and mailhandler wage rate is an important factor in determining the unit costs by operation on the cost summary pages. In Docket No. MC95-1, the same wage rate was used for all mail processing operations. In this docket, the clerk and mailhandler wage has been disaggregated into three different wages: window service, RBCS, and other mail processing. This disaggregation was done to account for the fact that on average, wage rates for these three categories tend to differ significantly. For example, the wage rate for RBCS operations is significantly

[6] See USPS LR-H-113.

lower than for other mail processing operations due to the use of transitional employees at remote encoding centers (RECs). Because the models developed in this tesimony do not account for window service mail processing costs, only the RBCS and other mail processing wage rates are used. On each cost summary sheet, the unit costs by operation for all operations with the exception of RBCS are calculated using the other mail processing wage rate and the RBCS operation costs are calculated using the RBCS wage.[7]

C. PIGGYBACK FACTORS AND PREMIUM PAY ADJUSTMENTS

As stated earlier, piggyback factors and the premium pay adjustment are used to adjust the direct mail processing unit costs by operations. The operation specific piggyback factors are designed to capture indirect mail processing costs such as supervisor time and facility space associated with each operation. The premium pay adjustment is designed to account for the higher marginal costs associated with processing First-Class Mail due to the fact that it receives preferential processing.[8]

D. INPUTS USED IN FLOW MODELS

The input data used in the flow models include: accept and upgrade rates, mailflow densities, and coverage factors. Accept and upgrade rates and coverage factors have been updated for this docket, while the mailflow densities come from Docket No. MC95-1. The updated accept and upgrade rates are described on pages 20-21 of this testimony. The mailflow densities come from Docket No. MC95-1, USPS LR-MCR-3.

Coverage factors for this docket were calculated using the same methodology employed in Docket No. MC95-1; however, they were updated using FY 96 data.

---

[7] Wage rates are from Library Reference USPS LR-H-146.

[8] Operation specific piggyback factors and premium pay factors are from Library Reference USPS LR-H-77.

Another difference between the coverage factors used in this docket and the coverage factors from Docket No. MC95-1, is that the current coverage factors are subclass and presort level specific. Whereas the coverage factors used by witness Smith in Docket No. MC95-1 were for all First-Class Mail, the coverage factors used in this testimony are specific to First-Class non-carrier route presort mail.

To develop the coverage factors, data were taken from the Origin-Destination Information System (ODIS) to determine the volumes of mail that both originate and destinate at facilities that have certain types of automation. The coverage factors used in this testimony are shown on page 34 of this appendix. They can be divided into two groups: coverage factors calculated using ODIS data and other coverage factors. Coverage factors calculated using ODIS data come from USPS LR-H-128 and are listed below:

- Origin OCR coverage factor
- Destination OCR coverage factor
- Origin BCS coverage factor
- Destination BCS coverage factor
- Automated IS zone given BCS destination
- DPS given BCS destination
- DPS percentage of automated IS given BCS destination
- Origin RBCS coverage factor
- Destination RBCS coverage factor
- Non-eligible automation carrier route destination
- DBCS volume share of DPS
- CSBCS volume share of DPS
- BCS origin minus BCS destination
- MLOCR origin minus BCS destination
- Non-automated origin to automated destination

The other coverage factors used in the mail flow models are primarily calculated by combining and manipulating certain coverage factors listed above. The other coverage factors include:

- BCS destination given BCS origin
- BCS destination given OCR origin
- BCS destination given 100 percent automated AADC
- Automated IS zone total
- Percent of mail destinating in PO Boxes
- RBCS leakage factor
- AADC mail where the service area is larger than the SCF service area

In general, the coverage factors are similar to those used in Docket No. MC95-1, however, because the amount of automation has increased, the automation coverage factors have also increased significantly.

Development of First-Class Mail Processing Model Unit Costs

First-Class Automation Basic Presort

Per Piece Cost Summary by Operation

	[1] TPF	[2] Pieces per Hour	[3] Wage Rate	[4] Cents per Piece	[5] Piggyback Factor	[6] Premium Pay Adjustment	[7] Cents per Piece	[8] Weighted Cost
Outgoing Primary								
Manual	273	662	$25.45	3.8437	1.3720	0.0423	5.3158	0.1452
Mechanized	0	1,413	$25.45	1.8008	2.2400	0.0198	4.0536	0.0000
BCS	4,812	7,467	$25.45	0.3408	1.7190	0.0037	0.5895	0.2837
Outgoing Secondary								
Manual	81	691	$25.45	3.6823	1.3720	0.0405	5.0927	0.0414
Mechanized	0	1,440	$25.45	1.7670	2.2400	0.0194	3.9775	0.0000
BCS	792	7,467	$25.45	0.3408	1.7190	0.0037	0.5895	0.0467
ADC/AADC Distribution								
Manual	398	759	$25.45	3.3524	1.3720	0.0369	4.6364	0.1843
Mechanized	0	1,271	$25.45	2.0020	2.2400	0.0220	4.5064	0.0000
BCS	5,569	7,467	$25.45	0.3408	1.7190	0.0037	0.5895	0.3283
SCF Operations								
Manual	518	896	$25.45	2.8398	1.3720	0.0312	3.9275	0.2035
Mechanized	0	1,351	$25.45	1.8834	2.2400	0.0207	4.2396	0.0000
BCS	3,397	7,467	$25.45	0.3408	1.7190	0.0037	0.5895	0.2002
Incoming Primary								
Manual	322	562	$25.45	4.5276	1.3720	0.0498	6.2616	0.2017
Mechanized	0	1,271	$25.45	2.0020	2.2400	0.0220	4.5064	0.0000
BCS	1,496	7,467	$25.45	0.3408	1.7190	0.0037	0.5895	0.0882
Incoming Secondary								
Manual/Non-Auto Sites	1,347	1,143	$25.45	2.2261	1.3720	0.0245	3.0787	0.4146
Manual/Auto Sites	1,482	646	$25.45	3.9389	1.3720	0.0433	5.4474	0.8070
Mechanized	0	1,151	$25.45	2.2107	2.2400	0.0243	4.9763	0.0000
BCS	2,231	6,633	$25.45	0.3836	1.7190	0.0042	0.6636	0.1481
DBCS First-Pass	5,724	8,393	$25.45	0.3032	2.4340	0.0033	0.7412	0.4243
DBCS Second-Pass	5,438	8,393	$25.45	0.3032	2.4340	0.0033	0.7412	0.4031
CSBCS First-Pass	1,286	17,124	$25.45	0.1486	1.9480	0.0016	0.2911	0.0374
CSBCS Second-Pass	1,267	17,124	$25.45	0.1486	1.9480	0.0016	0.2911	0.0369
CSBCS Third-Pass	1,254	17,124	$25.45	0.1486	1.9480	0.0016	0.2911	0.0365

Development of First-Class Mail Processing Model Unit Costs

First-Class Automation Basic Presort

Per Piece Cost Summary by Operation (Continued)

	[1] TPF	[2] Pieces per Hour	[3] Wage Rate	[4] Cents per Piece	[5] Piggyback Factor	[6] Premium Pay Adjustment	[7] Cents per Piece	[8] Weighted Cost	
Other									
Accept./Verification	10,000						0.0699	0.0699	1/
Sort to P. O. Boxes:									
DPS	570	2,341	$25.45	1.0868	1.3660	0.0120	1.4965	0.0854	
Non-DPS	320	1,171	$25.45	2.1735	1.3660	0.0239	2.9929	0.0957	
% DPS	64.08% 2/					**MODEL COST**		**4.2822**	3/

Row 1/: Appenix V, page 3 of 4, LDC 79 unit cost (business mail entry).

Row 2/: DPS percentage from flow model (CSBCS and DBCS accepted volumes as a percent of total pieces).

Row 3/: Total model cost (sum of column 8).

Column [1]: Pieces processed in each operation from flow model.

Column [2]: Volume variable mail processing productivities by operation (Appendix I, page 32 of 37).

Column [3]: Test year clerk and mail handler wage rates (Appendix I, page 37 of 37).

Column [4]: (Column 3 * 100) / Column 2.

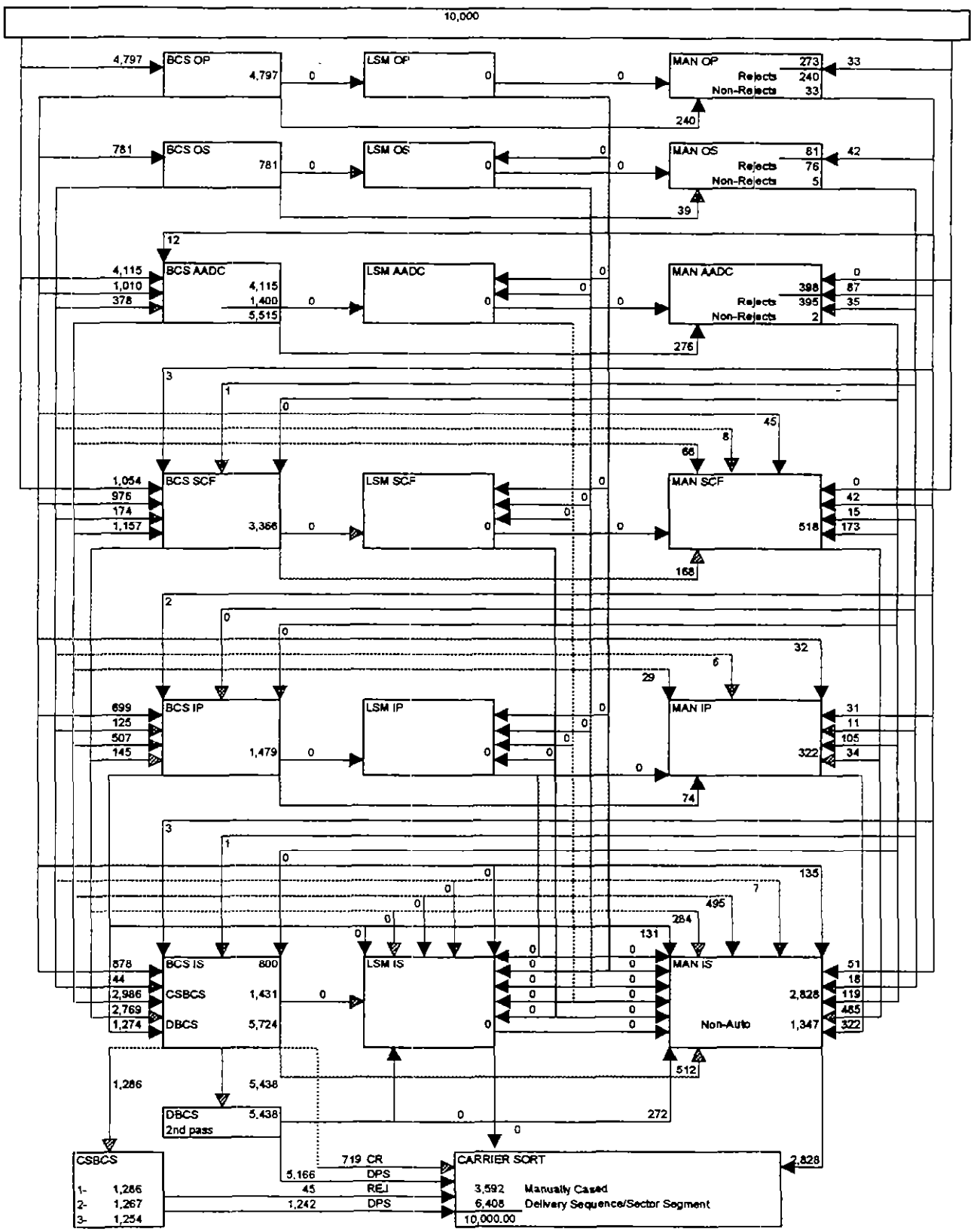
Column [5]: Mail processing piggyback factors by operation (Appendix I, page 37 of 37).

Column [6]: Column 4 * (First-Class presort premium pay adjustment - 1). See Appendix I, page 37 of 37.

Column [7]: Column 4 * column 5 + column 6.

Column [8]: Column 1 * column 7.

Development of First-Class Mail Processing Model Unit Costs
First-Class Automation Basic Presort



Development of First-Class Mail Processing Model Unit Costs

First-Class Automation 3-Digit Presort

Per Piece Cost Summary by Operation

	[1] TPF	[2] Pieces per Hour	[3] Wage Rate	[4] Cents per Piece	[5] Piggyback Factor	[6] Premium Pay Adjustment	[7] Cents per Piece	[8] Weighted Cost	
Incoming Primary									
Manual	935	562	$25.45	4.5276	1.3720	0.0498	6.2616	0.5855	
Mechanized	0	1,271	$25.45	2.0020	2.2400	0.0220	4.5064	0.0000	
BCS	9,657	7,467	$25.45	0.3408	1.7190	0.0037	0.5895	0.5693	
Incoming Secondary									
Manual/Non-Auto Sites	1,345	1,143	$25.45	2.2261	1.3720	0.0245	3.0787	0.4142	
Manual/Auto Sites	1,242	646	$25.45	3.9389	1.3720	0.0433	5.4474	0.6768	
Mechanized	0	1,151	$25.45	2.2107	2.2400	0.0243	4.9763	0.0000	
BCS	2,306	6,633	$25.45	0.3836	1.7190	0.0042	0.6636	0.1530	
DBCS First-Pass	5,916	8,393	$25.45	0.3032	2.4340	0.0033	0.7412	0.4385	
DBCS Second-Pass	5,620	8,393	$25.45	0.3032	2.4340	0.0033	0.7412	0.4166	
CSBCS First-Pass	1,330	17,124	$25.45	0.1486	1.9480	0.0016	0.2911	0.0387	
CSBCS Second-Pass	1,310	17,124	$25.45	0.1486	1.9480	0.0016	0.2911	0.0381	
CSBCS Third-Pass	1,297	17,124	$25.45	0.1486	1.9480	0.0016	0.2911	0.0377	
Other									
Accept./Verification	10,000						0.0699	0.0699	1/
Sort to P. O. Boxes:									
DPS	590	2,341	$25.45	1.0868	1.3660	0.0120	1.4965	0.0882	
Non-DPS	301	1,171	$25.45	2.1735	1.3660	0.0239	2.9929	0.0900	
% DPS	66.23% 2/					**MODEL COST**		**3.6167**	3/

Row 1/: Appenix V, page 3 of 4, LDC 79 unit cost (business mail entry).

Row 2/: DPS percentage from flow model (CSBCS and DBCS accepted volumes as a percent of total pieces).

Row 3/: Total model cost (sum of column 8).

Column [1]: Pieces processed in each operation from flow model.

Column [2]: Volume variable mail processing productivities by operation (Appendix I, page 32 of 37).

Column [3]: Test year clerk and mail handler wage rates (Appendix I, page 37 of 37).

Column [4]: (Column 3 * 100) / Column 2.

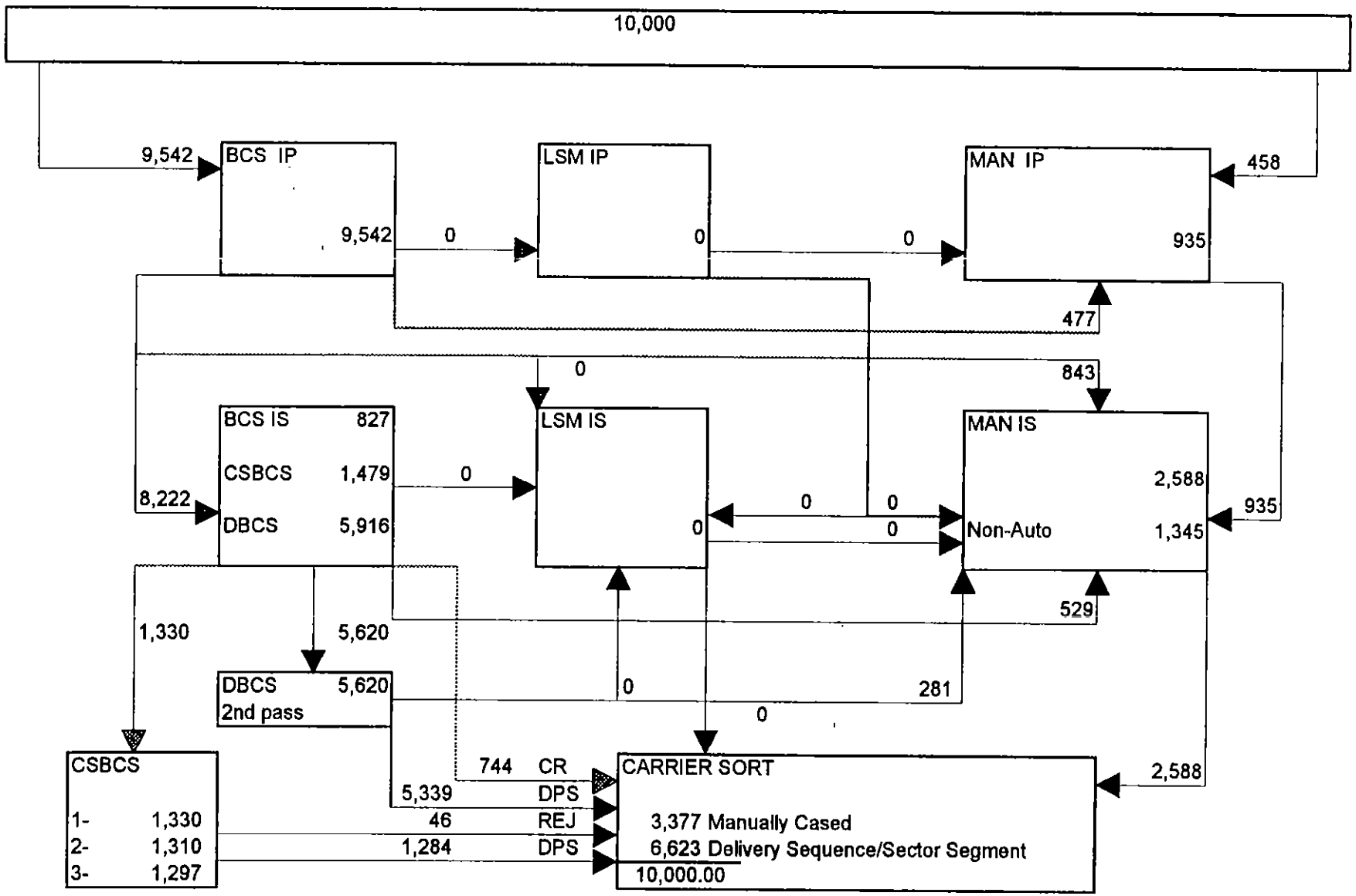
Column [5]: Mail processing piggyback factors by operation (Appendix I, page 37 of 37).

Column [6]: Column 4 * (First-Class presort premium pay adjustment - 1). See Appendix I, page 37 of 37.

Column [7]: Column 4 * column 5 + column 6.

Column [8]: Column 1 * column 7.

Development of First-Class Mail Processing Model Unit Costs
First-Class Automation 3-Digit Presort



Development of First-Class Mail Processing Model Unit Costs

First-Class Automation 5-Digit Presort

Per Piece Cost Summary by Operation

	[1] TPF	[2] Pieces per Hour	[3] Wage Rate	[4] Cents per Piece	[5] Piggyback Factor	[5] Premium Pay Adjustment	[6] Cents per Piece	[7] Weighted Cost	
Incoming Secondary									
Manual/Non-Auto Sites	1,345	1,143	$25.45	2.2261	1.3720	0.0245	3.0787	0.4142	
Manual/Auto Sites	852	646	$25.45	3.9389	1.3720	0.0433	5.4474	0.4643	
Mechanized	0	1,151	$25.45	2.2107	2.2400	0.0243	4.9763	0.0000	
BCS	2,427	6,633	$25.45	0.3836	1.7190	0.0042	0.6636	0.1611	
DBCS First-Pass	6,227	8,393	$25.45	0.3032	2.4340	0.0033	0.7412	0.4616	
DBCS Second-Pass	5,916	8,393	$25.45	0.3032	2.4340	0.0033	0.7412	0.4385	
CSBCS First-Pass	1,400	17,124	$25.45	0.1486	1.9480	0.0016	0.2911	0.0407	
CSBCS Second-Pass	1,379	17,124	$25.45	0.1486	1.9480	0.0016	0.2911	0.0401	
CSBCS Third-Pass	1,365	17,124	$25.45	0.1486	1.9480	0.0016	0.2911	0.0397	
Other									
Accept./Verification	10,000						0.0699	0.0699	1/
Sort to P. O. Boxes:									
DPS	621	2,341	$25.45	1.0868	1.3660	0.0120	1.4965	0.0929	
Non-DPS	270	1,171	$25.45	2.1735	1.3660	0.0239	2.9929	0.0807	
% DPS	69.71% 2/					**MODEL COST**		**2.3038**	3/

Row 1/: Appenix V, page 3 of 4, LDC 79 unit cost (business mail entry).

Row 2/: DPS percentage from flow model (CSBCS and DBCS accepted volumes as a percent of total pieces).

Row 3/: Total model cost (sum of column 8).

Column [1]: Pieces processed in each operation from flow model.

Column [2]: Volume variable mail processing productivities by operation (Appendix I, page 32 of 37).

Column [3]: Test year clerk and mail handler wage rates (Appendix I, page 37 of 37).

Column [4]: (Column 3 * 100) / Column 2.

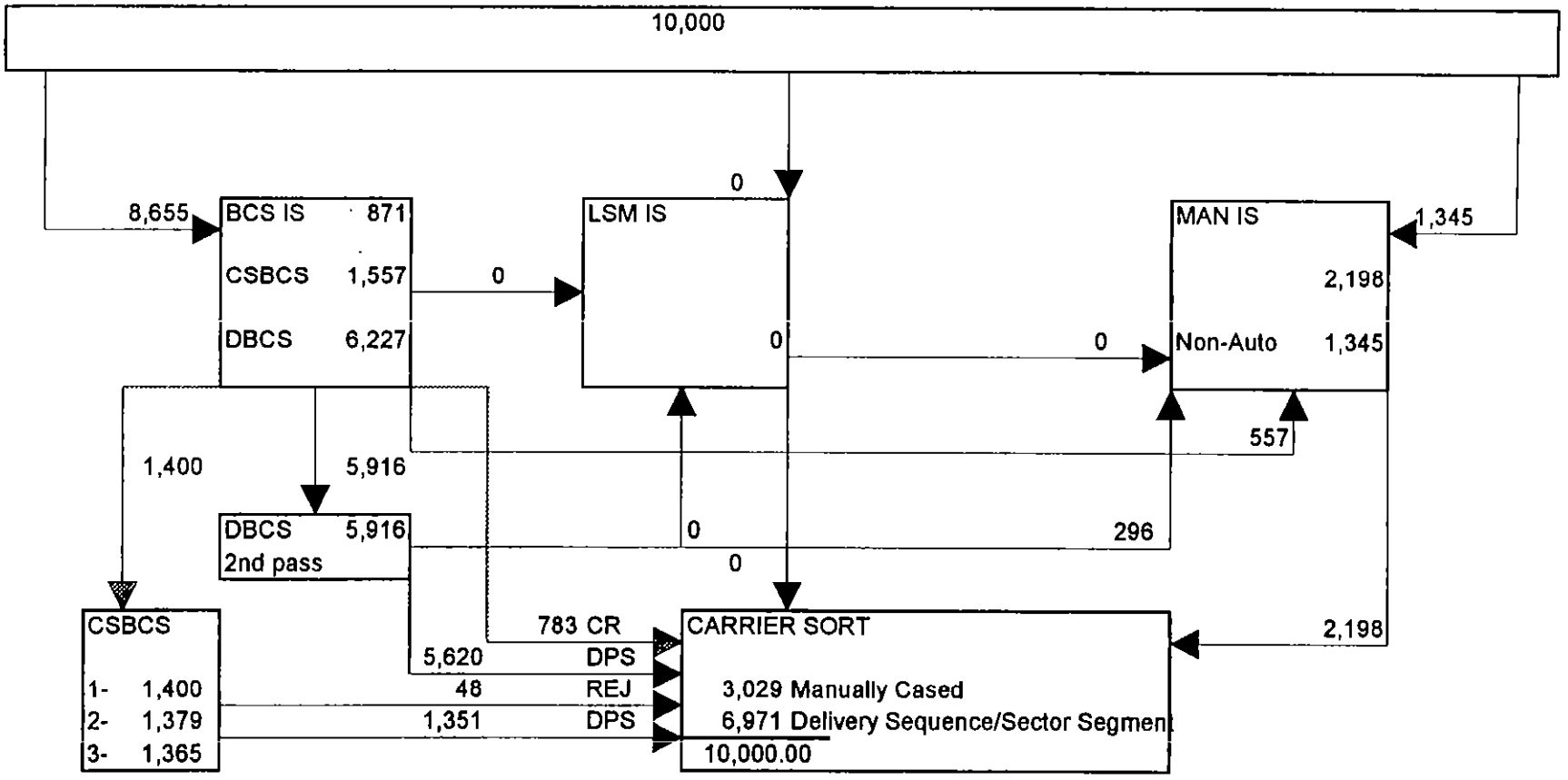
Column [5]: Mail processing piggyback factors by operation (Appendix I, page 37 of 37).

Column [6]: Column 4 * (First-Class presort premium pay adjustment - 1). See Appendix I, page 37 of 37.

Column [7]: Column 4 * column 5 + column 6.

Column [8]: Column 1 * column 7.

Development of First-Class Mail Processing Model Unit Costs
First-Class Automation 5-Digit Presort



Development of First-Class Mail Processing Model Unit Costs

First-Class Nonautomation Presort Mail in OCR Upgradable Trays

Per Piece Cost Summary by Operation

	[1] TPF	[2] Pieces per Hour	[3] Wage Rate	[4] Cents per Piece	[5] Piggyback Factor	[6] Premium Pay Adjustment	[7] Cents per Piece	[8] Weighted Cost
Outgoing Primary								
Manual	113	662	$25.45	3.8437	1.3720	0 0423	5.3158	0.0601
Mechanized	0	1,413	$25.45	1.8008	2.2400	0 0198	4.0536	0.0000
MLOCR	2,552	7,350	$25.45	0.3462	2.0950	0 0038	0.7291	0.1860
RBCS	1,011	816	$14.92	1.8293	1.4500	0.0201	2.6726	0.2701
LMLM	69	4,985	$25.45	0.5104	1.4500	0 0056	0.7457	0.0052
BCS-OSS	978	11,984	$25.45	0.2123	1.7190	0.0023	0.3673	0.0359
MPBCS	113	7,467	$25.45	0.3408	1.7190	0.0037	0.5895	0.0066
Outgoing Secondary								
Manual	45	691	$25.45	3.6823	1.3720	0 0405	5.0927	0.0227
Mechanized	0	1,440	$25.45	1.7670	2.2400	0.0194	3.9775	0.0000
MPBCS	549	7,467	$25.45	0.3408	1.7190	0 0037	0.5895	0.0323
ADC/AADC Distribution								
Manual	117	759	$25.45	3.3524	1.3720	0.0369	4.6364	0.0542
Mechanized	0	1,271	$25.45	2.0020	2.2400	0.0220	4.5064	0.0000
MLOCR	1,299	7,350	$25.45	0.3462	2.0950	0.0038	0.7291	0.0947
RBCS	514	816	$14.92	1.8293	1.4500	0.0201	2.6726	0.1375
LMLM	35	4,985	$25.45	0.5104	1.4500	0.0056	0.7457	0.0026
BCS-OSS	498	11,984	$25.45	0.2123	1.7190	0.0023	0.3673	0.0183
MPBCS	495	7,467	$25.45	0.3408	1.7190	0.0037	0.5895	0.0292
SCF Operations								
Manual	167	896	$25.45	2.8398	1.3720	0.0312	3.9275	0.0657
Mechanized	0	1,351	$25.45	1.8834	2.2400	0.0207	4.2396	0.0000
MLOCR	333	7,350	$25.45	0.3462	2.0950	0.0038	0.7291	0.0243
RBCS	121	816	$14.92	1.8293	1.4500	0.0201	2.6726	0.0324
LMLM	8	4,985	$25.45	0.5104	1.4500	0.0056	0.7457	0.0006
BCS-OSS	117	11,984	$25.45	0.2123	1.7190	0.0023	0.3673	0.0043
MPBCS	818	7,467	$25.45	0.3408	1.7190	0.0037	0.5895	0.0482
Incoming Primary								
Manual	615	562	$25.45	4.5276	1.3720	0.0498	6.2616	0.3849
Mechanized	0	1,271	$25.45	2.0020	2.2400	0.0220	4.5064	0.0000
MLOCR	5,525	7,350	$25.45	0.3462	2.0950	0.0038	0.7291	0.4028
RBCS	2,011	816	$14.92	1.8293	1.4500	0.0201	2.6726	0.5374
LMLM	138	4,985	$25.45	0.5104	1.4500	0.0056	0.7457	0.0103
BCS-OSS	1,946	11,984	$25.45	0.2123	1.7190	0.0023	0.3673	0.0715
MPBCS	1,080	7,467	$25.45	0.3408	1.7190	0.0037	0.5895	0.0636

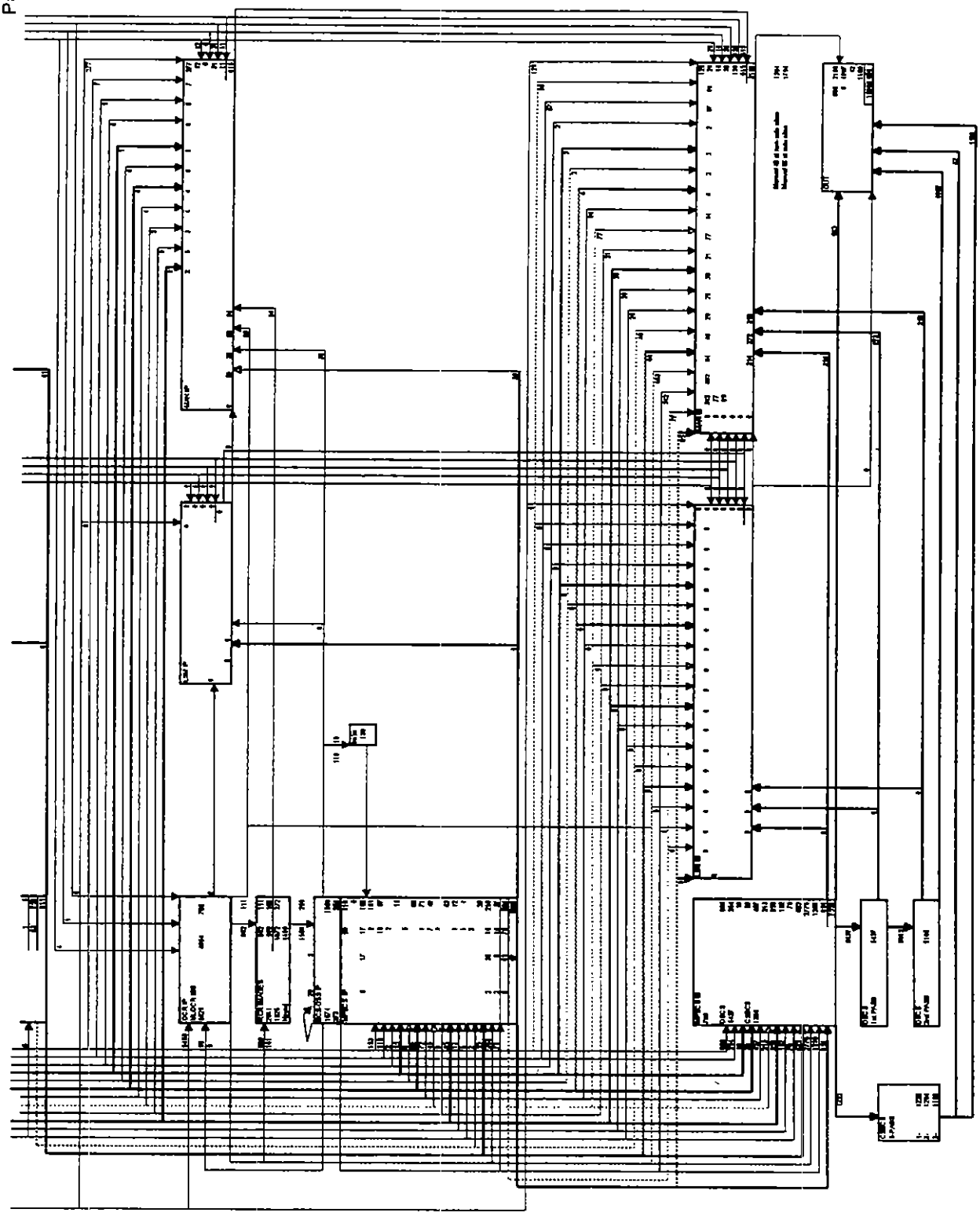
Development of First-Class Mail Processing Model Unit Costs

First-Class Nonautomation Presort Mail in OCR Upgradable Trays

Per Piece Cost Summary by Operation (Continued)

	[1] TPF	[2] Pieces per Hour	[3] Wage Rate	[4] Cents per Piece	[5] Piggyback Factor	[6] Premium Pay Adjustment	[7] Cents per Piece	[8] Weighted Cost	
Incoming Secondary									
Manual/Non-Auto Sites	1,394	1,143	$25.45	2.2261	1.3720	0.0245	3.0787	0.4292	
Manual/Auto Sites	1,794	646	$25.45	3.9389	1.3720	0.0433	5.4474	0.9772	
Mechanized	0	1,151	$25.45	2.2107	2.2400	0.0243	4.9763	0.0000	
MPBCS	2,119	6,633	$25.45	0.3836	1.7190	0.0042	0.6636	0.1406	
DBCS First-Pass	5,437	8,393	$25.45	0.3032	2.4340	0.0033	0.7412	0.4030	
DBCS Second-Pass	5,165	8,393	$25.45	0.3032	2.4340	0.0033	0.7412	0.3829	
CSBCS First-Pass	1,222	17,124	$25.45	0.1486	1.9480	0.0016	0.2911	0.0356	
CSBCS Second-Pass	1,204	17,124	$25.45	0.1486	1.9480	0.0016	0.2911	0.0350	
CSBCS Third-Pass	1,192	17,124	$25.45	0.1486	1.9480	0.0016	0.2911	0.0347	
Other									
Accept./Verification	10,000						0.0699	0.0699	1/
Sort to P. O. Boxes:									
DPS	542	2,341	$25.45	1.0868	1.3660	0.0120	1.4965	0.0811	
Non-DPS	348	1,171	$25.45	2.1735	1.3660	0.0239	2.9929	0.1043	
% DPS	60.86% 2/					MODEL COST		5.2952	3/

Row 1/: Appenix V, page 3 of 4, LDC 79 unit cost (business mail entry).
Row 2/: DPS percentage from flow model (CSBCS and DBCS accepted volumes as a percent of total pieces).
Row 3/: Total model cost (sum of column 8).
Column [1]: Pieces processed in each operation from flow model.
Column [2]: Volume variable mail processing productivities by operation (Appendix I, page 32 of 37).
Column [3]: Test year clerk and mail handler wage rates (Appendix I, page 37 of 37).
Column [4]: (Column 3 * 100) / Column 2.
Column [5]: Mail processing piggyback factors by operation (Appendix I, page 37 of 37).
Column [6]: Column 4 * (First-Class presort premium pay adjustment - 1). See Appendix I, page 37 of 37.
Column [7]: Column 4 * column 5 + column 6.
Column [8]: Column 1 * column 7.



Development of First-Class Mail Processing Model Unit Costs

First-Class Nonautomation Presort OCR Upgradable Mail in Non-OCR Trays

Per Piece Cost Summary by Operation

	[1] TPF	[2] Pieces per Hour	[3] Wage Rate	[4] Cents per Piece	[5] Piggyback Factor	[6] Premium Pay Adjustment	[7] Cents per Piece	[8] Weighted Cost
Outgoing Primary								
Manual	42	662	$25.45	3.8437	1.3720	0.0423	5.3158	0.0223
Mechanized	0	1,413	$25.45	1.8008	2.2400	0.0198	4.0536	0.0000
MLOCR	1,142	7,350	$25.45	0.3462	2.0950	0.0038	0.7291	0.0832
RBCS	452	816	$14.92	1.8293	1.4500	0.0201	2.6726	0.1209
LMLM	31	4,985	$25.45	0.5104	1.4500	0.0056	0.7457	0.0023
BCS-OSS	438	11,984	$25.45	0.2123	1.7190	0.0023	0.3673	0.0161
MPBCS	50	7,467	$25.45	0.3408	1.7190	0.0037	0.5895	0.0030
Outgoing Secondary								
Manual	19	691	$25.45	3.6823	1.3720	0.0405	5.0927	0.0095
Mechanized	0	1,440	$25.45	1.7670	2.2400	0.0194	3.9775	0.0000
MPBCS	245	7,467	$25.45	0.3408	1.7190	0.0037	0.5895	0.0145
ADC/AADC Distribution								
Manual	51	759	$25.45	3.3524	1.3720	0.0369	4.6364	0.0239
Mechanized	0	1,271	$25.45	2.0020	2.2400	0.0220	4.5064	0.0000
MLOCR	574	7,350	$25.45	0.3462	2.0950	0.0038	0.7291	0.0418
RBCS	227	816	$14.92	1.8293	1.4500	0.0201	2.6726	0.0607
LMLM	16	4,985	$25.45	0.5104	1.4500	0.0056	0.7457	0.0012
BCS-OSS	220	11,984	$25.45	0.2123	1.7190	0.0023	0.3673	0.0081
MPBCS	221	7,467	$25.45	0.3408	1.7190	0.0037	0.5895	0.0130
SCF Operations								
Manual	65	896	$25.45	2.8398	1.3720	0.0312	3.9275	0.0257
Mechanized	0	1,351	$25.45	1.8834	2.2400	0.0207	4.2396	0.0000
MLOCR	0	7,350	$25.45	0.3462	2.0950	0.0038	0.7291	0.0000
RBCS	0	816	$14.92	1.8293	1.4500	0.0201	2.6726	0.0000
LMLM	0	4,985	$25.45	0.5104	1.4500	0.0056	0.7457	0.0000
BCS-OSS	0	11,984	$25.45	0.2123	1.7190	0.0023	0.3673	0.0000
MPBCS	351	7,467	$25.45	0.3408	1.7190	0.0037	0.5895	0.0207
Incoming Primary								
Manual	197	562	$25.45	4.5276	1.3720	0.0498	6.2616	0.1236
Mechanized	0	1,271	$25.45	2.0020	2.2400	0.0220	4.5064	0.0000
MLOCR	7,378	7,350	$25.45	0.3462	2.0950	0.0038	0.7291	0.5379
RBCS	2,685	816	$14.92	1.8293	1.4500	0.0201	2.6726	0.7177
LMLM	185	4,985	$25.45	0.5104	1.4500	0.0056	0.7457	0.0138
BCS-OSS	2,599	11,984	$25.45	0.2123	1.7190	0.0023	0.3673	0.0955
MPBCS	905	7,467	$25.45	0.3408	1.7190	0.0037	0.5895	0.0533

Development of First-Class Mail Processing Model Unit Costs

First-Class Nonautomation Presort OCR Upgradable Mail in Non-OCR Trays

Per Piece Cost Summary by Operation (Continued)

	[1] TPF	[2] Pieces per Hour	[3] Wage Rate	[4] Cents per Piece	[5] Piggyback Factor	[6] Premium Pay Adjustment	[7] Cents per Piece	[8] Weighted Cost	
Incoming Secondary									
Manual/Non-Auto Sites	1,422	1,143	$25.45	2.2261	1.3720	0.0245	3.0787	0.4379	
Manual/Auto Sites	1,784	646	$25.45	3.9389	1.3720	0.0433	5.4474	0.9716	
Mechanized	0	1,151	$25.45	2.2107	2.2400	0.0243	4.9763	0.0000	
MPBCS	2,114	6,633	$25.45	0.3836	1.7190	0.0042	0.6636	0.1403	
DBCS First-Pass	5,422	8,393	$25.45	0.3032	2.4340	0.0033	0.7412	0.4019	
DBCS Second-Pass	5,151	8,393	$25.45	0.3032	2.4340	0.0033	0.7412	0.3818	
CSBCS First-Pass	1,219	17,124	$25.45	0.1486	1.9480	0.0016	0.2911	0.0355	
CSBCS Second-Pass	1,200	17,124	$25.45	0.1486	1.9480	0.0016	0.2911	0.0349	
CSBCS Third-Pass	1,188	17,124	$25.45	0.1486	1.9480	0.0016	0.2911	0.0346	
Other									
Accept./Verification	10,000						0.0699	0.0699	1/
Sort to P. O. Boxes:									
DPS	540	2,341	$25.45	1.0868	1.3660	0.0120	1.4965	0.0809	
Non-DPS	350	1,171	$25.45	2.1735	1.3660	0.0239	2.9929	0.1047	
Bundle Sorting	10,000						0.4930	0.4930	4/
% DPS	60.70% 2/					MODEL COST		5.1958	3/

Row 1/: Appenix V, page 3 of 4, LDC 79 unit cost (business mail entry).

Row 2/: DPS percentage from flow model (CSBCS and DBCS accepted volumes as a percent of total pieces).

Row 3/: Total model cost (sum of column 8).

Row 4/: Appendix III, page 10 of 10, row 1.

Column [1]: Pieces processed in each operation from flow model.

Column [2]: Volume variable mail processing productivities by operation (Appendix I, page 32 of 37).

Column [3]: Test year clerk and mail handler wage rates (Appendix I, page 37 of 37).

Column [4]: (Column 3 * 100) / Column 2.

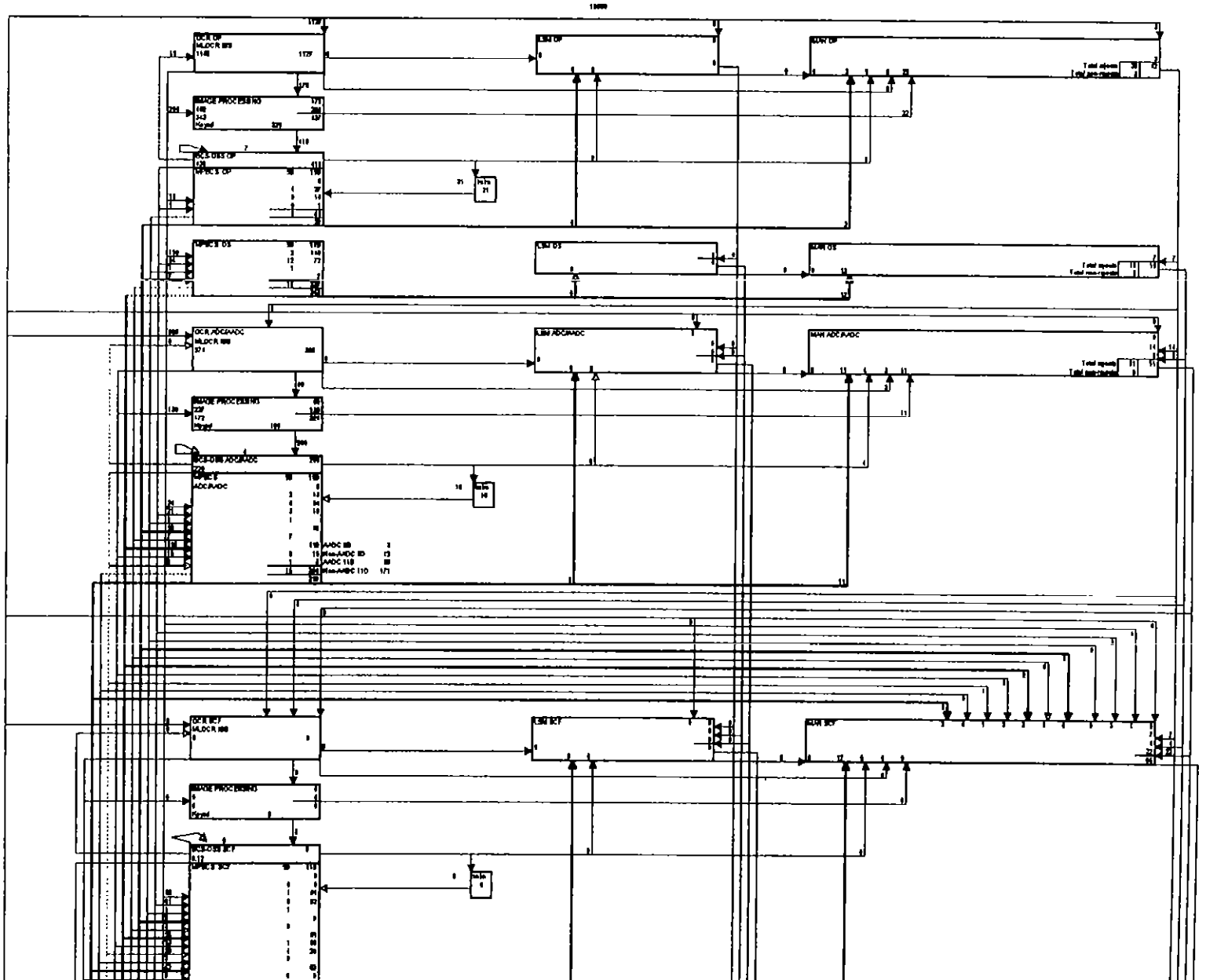
Column [5]: Mail processing piggyback factors by operation (Appendix I, page 37 of 37).

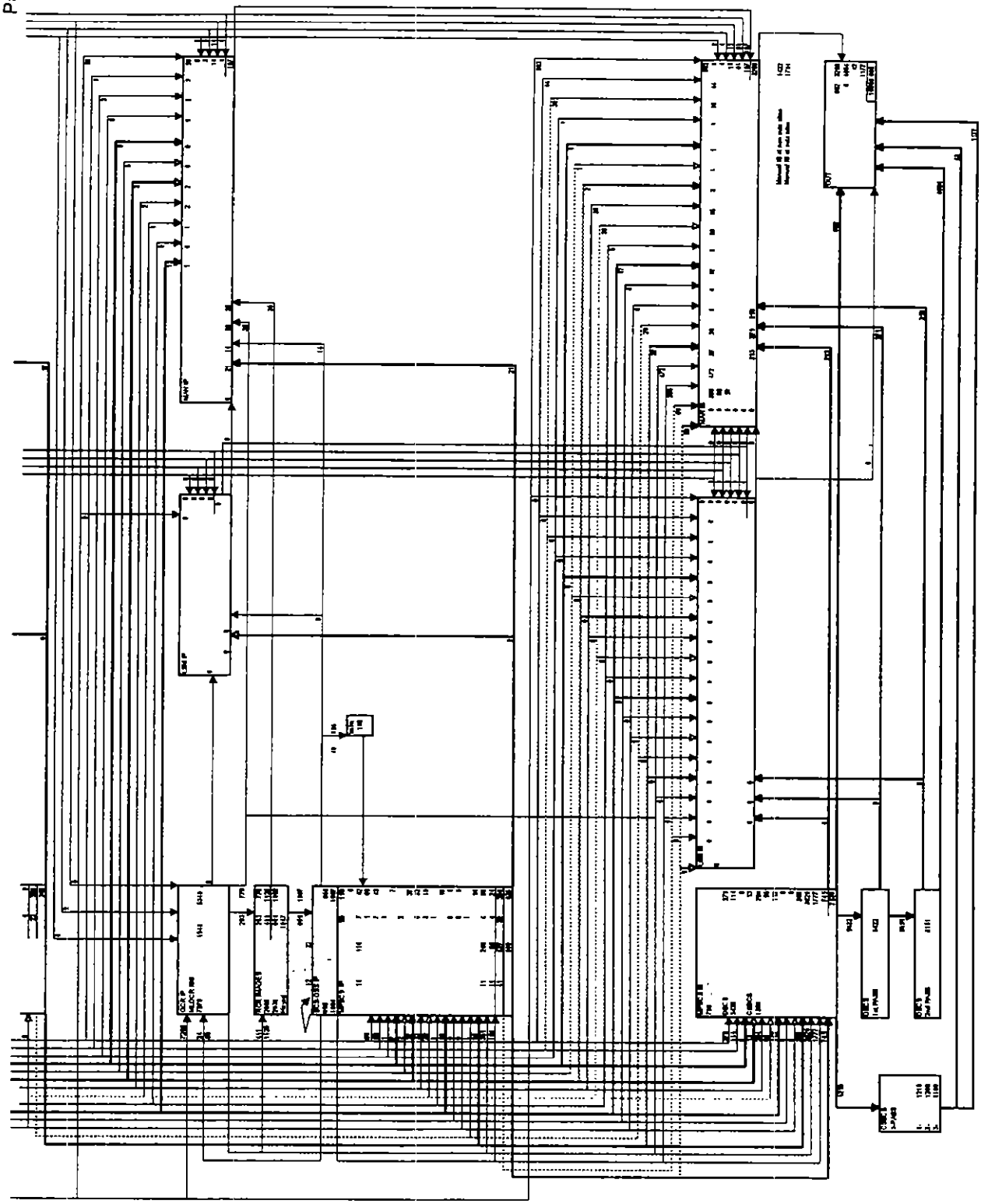
Column [6]: Column 4 * (First-Class presort premium pay adjustment - 1). See Appendix I, page 37 of 37.

Column [7]: Column 4 * column 5 + column 6.

Column [8]: Column 1 * column 7.

Development of First-Class Mail Processing Model Unit Costs
First-Class Nonautomation Presort OCR Upgradable Mail in Non-OCR Trays





Development of First-Class Mail Processing Model Unit Costs

First-Class Nonautomation Presort Non-OCR Upgradable Mail in Non-OCR Trays

Per Piece Cost Summary by Operation

	[1] TPF	[2] Pieces per Hour	[3] Wage Rate	[4] Cents per Piece	[5] Piggyback Factor	[6] Premium Pay Adjustment	[7] Cents per Piece	[8] Weighted Cost
Outgoing Primary								
Manual	59	662	$25.45	3.8437	1.3720	0.0423	5.3158	0.0316
Mechanized	0	1,413	$25.45	1.8008	2.2400	0.0198	4.0536	0.0000
MLOCR	46	7,350	$25.45	0.3462	2.0950	0.0038	0.7291	0.0034
RBCS	22	816	$14.92	1.8293	1.4500	0.0201	2.6726	0.0059
LMLM	2	4,985	$25.45	0.5104	1.4500	0.0056	0.7457	0.0002
BCS-OSS	21	11,984	$25.45	0.2123	1.7190	0.0023	0.3673	0.0008
MPBCS	3	7,467	$25.45	0.3408	1.7190	0.0037	0.5895	0.0002
Outgoing Secondary								
Manual	10	691	$25.45	3.6823	1.3720	0.0405	5.0927	0.0049
Mechanized	0	1,440	$25.45	1.7670	2.2400	0.0194	3.9775	0.0000
MPBCS	10	7,467	$25.45	0.3408	1.7190	0.0037	0.5895	0.0006
ADC/AADC Distribution								
Manual	104	759	$25.45	3.3524	1.3720	0.0369	4.6364	0.0484
Mechanized	0	1,271	$25.45	2.0020	2.2400	0.0220	4.5064	0.0000
MLOCR	64	7,350	$25.45	0.3462	2.0950	0.0038	0.7291	0.0047
RBCS	31	816	$14.92	1.8293	1.4500	0.0201	2.6726	0.0082
LMLM	3	4,985	$25.45	0.5104	1.4500	0.0056	0.7457	0.0002
BCS-OSS	30	11,984	$25.45	0.2123	1.7190	0.0023	0.3673	0.0011
MPBCS	13	7,467	$25.45	0.3408	1.7190	0.0037	0.5895	0.0007
SCF Operations								
Manual	59	896	$25.45	2.8398	1.3720	0.0312	3.9275	0.0232
Mechanized	0	1,351	$25.45	1.8834	2.2400	0.0207	4.2396	0.0000
MLOCR	0	7,350	$25.45	0.3462	2.0950	0.0038	0.7291	0.0000
RBCS	0	816	$14.92	1.8293	1.4500	0.0201	2.6726	0.0000
LMLM	0	4,985	$25.45	0.5104	1.4500	0.0056	0.7457	0.0000
BCS-OSS	0	11,984	$25.45	0.2123	1.7190	0.0023	0.3673	0.0000
MPBCS	20	7,467	$25.45	0.3408	1.7190	0.0037	0.5895	0.0012
Incoming Primary								
Manual	1,167	562	$25.45	4.5276	1.3720	0.0498	6.2616	0.7306
Mechanized	0	1,271	$25.45	2.0020	2.2400	0.0220	4.5064	0.0000
MLOCR	3,873	7,350	$25.45	0.3462	2.0950	0.0038	0.7291	0.2824
RBCS	1,723	816	$14.92	1.8293	1.4500	0.0201	2.6726	0.4606
LMLM	174	4,985	$25.45	0.5104	1.4500	0.0056	0.7457	0.0130
BCS-OSS	1,656	11,984	$25.45	0.2123	1.7190	0.0023	0.3673	0.0608
MPBCS	411	7,467	$25.45	0.3408	1.7190	0.0037	0.5895	0.0242

Development of First-Class Mail Processing Model Unit Costs

First-Class Nonautomation Presort Non-OCR Upgradable Mail in Non-OCR Trays

Per Piece Cost Summary by Operation (Continued)

	[1] TPF	[2] Pieces per Hour	[3] Wage Rate	[4] Cents per Piece	[5] Piggyback Factor	[6] Premium Pay Adjustment	[7] Cents per Piece	[8] Weighted Cost	
Incoming Secondary									
Manual/Non-Auto Sites	1,433	1,143	$25.45	2.2261	1.3720	0.0245	3.0787	0.4411	
Manual/Auto Sites	5,629	646	$25.45	3.9389	1.3720	0.0433	5.4474	3.0661	
Mechanized	0	1,151	$25.45	2.2107	2.2400	0.0243	4.9763	0.0000	
MPBCS	914	6,633	$25.45	0.3836	1.7190	0.0042	0.6636	0.0607	
DBCS First-Pass	2,345	8,393	$25.45	0.3032	2.4340	0.0033	0.7412	0.1738	
DBCS Second-Pass	2,228	8,393	$25.45	0.3032	2.4340	0.0033	0.7412	0.1652	
CSBCS First-Pass	527	17,124	$25.45	0.1486	1.9480	0.0016	0.2911	0.0153	
CSBCS Second-Pass	519	17,124	$25.45	0.1486	1.9480	0.0016	0.2911	0.0151	
CSBCS Third-Pass	514	17,124	$25.45	0.1486	1.9480	0.0016	0.2911	0.0150	
Other									
Accept./Verification	10,000						0.0699	0.0699	1/
Sort to P. O. Boxes:									
DPS	234	2,341	$25.45	1.0868	1.3660	0.0120	1.4965	0.0350	
Non-DPS	656	1,171	$25.45	2.1735	1.3660	0.0239	2.9929	0.1965	
Bundle Sorting	10,000						0.7386	0.7386	4/
% DPS	26.25% 2/					MODEL COST		6.6992	3/

Row 1/: Appenix V, page 3 of 4, LDC 79 unit cost (business mail entry).

Row 2/: DPS percentage from flow model (CSBCS and DBCS accepted volumes as a percent of total pieces).

Row 3/: Total model cost (sum of column 8).

Row 4/: Appendix III, page 9 of 10, row 1.

Column [1]: Pieces processed in each operation from flow model.

Column [2]: Volume variable mail processing productivities by operation (Appendix I, page 32 of 37).

Column [3]: Test year clerk and mail handler wage rates (Appendix I, page 37 of 37).

Column [4]: (Column 3 * 100) / Column 2.

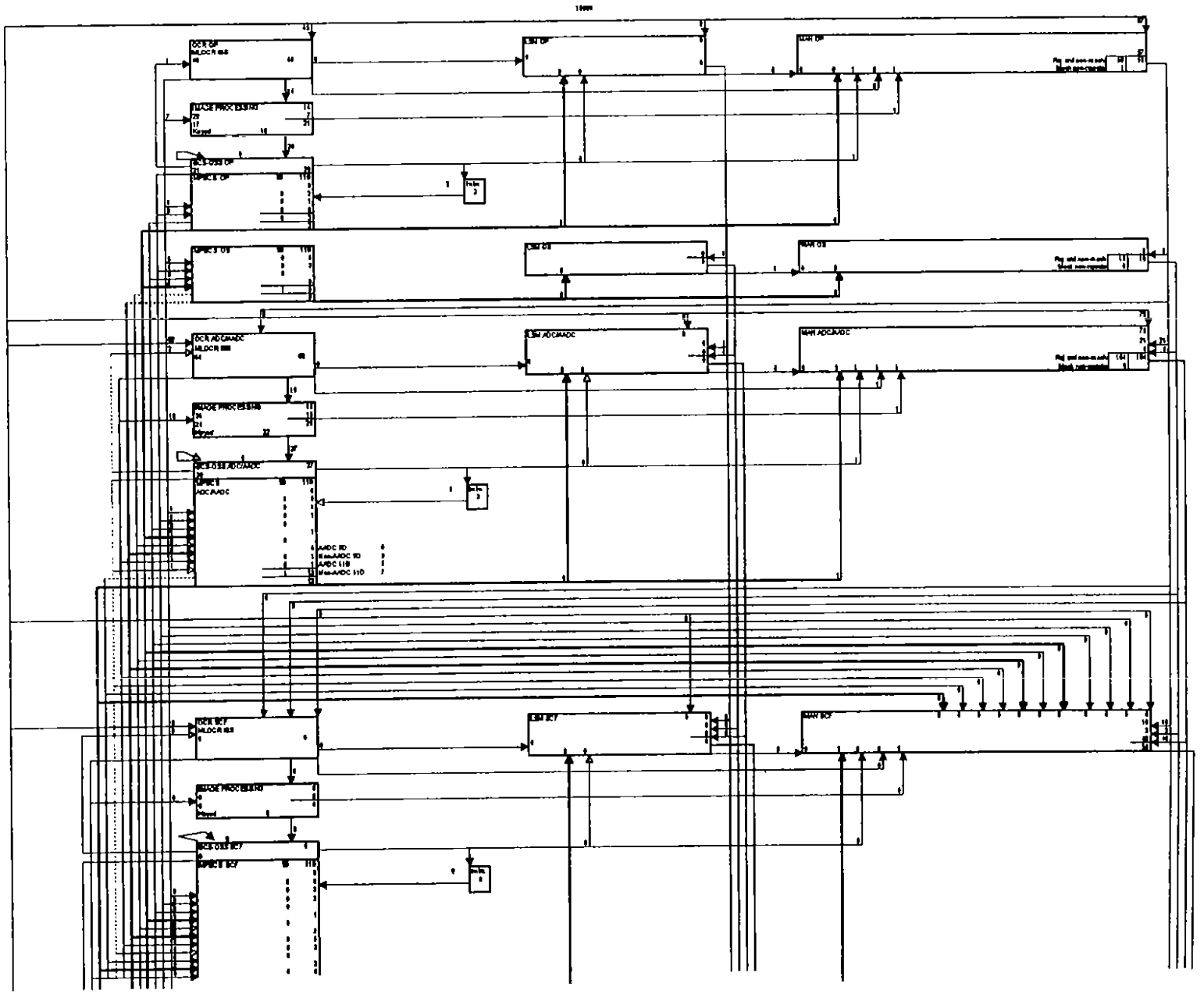
Column [5]: Mail processing piggyback factors by operation (Appendix I, page 37 of 37).

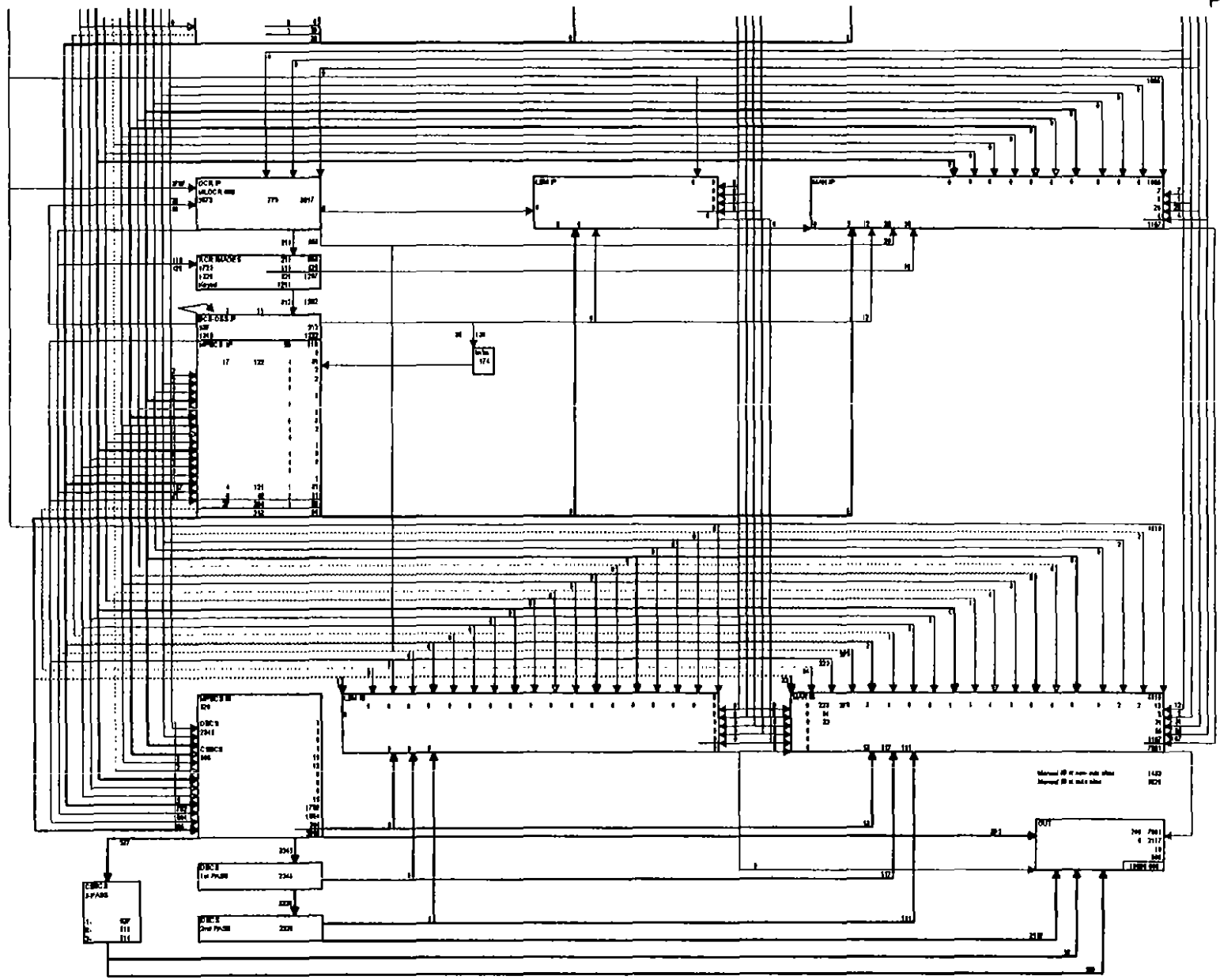
Column [6]: Column 4 * (First-Class presort premium pay adjustment - 1). See Appendix I, page 37 of 37.

Column [7]: Column 4 * column 5 + column 6.

Column [8]: Column 1 * column 7.

Development of First-Class Mail Processing Model Unit Costs
First-Class Nonautomation Presort Non-OCR Upgradable Mail In Non-OCR Trays





Development of First-Class Mail Processing Model Unit Costs

Productivity Data Used in Flow Models

	[1]	[2]	[3]
Non-Incoming Secondary Operations	**Adjusted Productivity**	**Productivitiy w/o Variability**	***Volume* Variability Factor**
MLOCR	7,350		
MPBCS/DBCS	7,467		
MPBCS-OSS	11,984		
LMLM	4,985		
RBCS	816		
Incoming Secondary Operations			
MPBCS/DBCS	6,633		
DPS and SS on MPBCS/DBCS	8,393		
CSBCS	17,124 1/	16,182 2/	94.5% 5/
Sort to PO Boxes			
Delivery Point Sequenced and Sector Segment	2,341 1/	1,920 3/	82.0% 6/
Non-DPS or SS	1,171	960 3/	82.0% 6/
Manual Letters			
Outgoing Primary	662		
Outgoing Secondary	691		
State Distribution	759		
SCF	896		
Incoming Primary	562		
Incoming Secondary at Auto Sites	646		
Incoming Secondary at Non-Auto Sites	1,143 1/	911 4/	79.7% 7/

Row 1/: Column 2 / column 3.

Row 2/: Procudtivity is from Docket No. MC95-1, USPS-T-10, adjusted by a factor of 85% to account for break time and other overhead.

Row 3/: Productivities are from Docket No. MC95-1, USPS-T-10.

Row 4/: Productivity is from Docket No. MC95-1, Exhibit USPS-T-10F at 1.

Row 5/: BCS volume variability factor (USPS-T-12, Table 4.).

Row 6/: LDC 44 (distribution to PO boxes) volume variability factor (USPS-T-12, Table 4.).

Row 7/: Manual sortation volume variability factor (USPS-T-12, Table 4.).

Column [1]: Volume variable mail processing productivities used in flow models are from USPS LR-H-113 except where noted.

Column [2]: Selected productivities not adjusted for volume variability.

Column [3]: Selected volume variability factors.

Development of First-Class Mail Processing Model Unit Costs

Accept And Upgrade Rates Used in Flow Models

OCR/RBCS Accept and Upgrade Rate Special Study
(Data are from USPS LR-H-130)

	MLOCR ISS		MPBCS OSS	
	Accept	Upgrade	Accept	Upgrade
First-Class Presort OCR Upgradable Mail	83.64%	71.61%	85.79%	85.74%
First-Class Presort Non-OCR Upgradable Mail	67.98%	76.45%	78.44%	87.57%

	Rejects from OSS to:			
MPBCS OSS Reject Rates	**iss**	**lmlm**	**oss**	**man**
First-Class Presort OCR Upgradable	3.63%	7.49%	1.76%	1.33%
First-Class Presort Non-OCR Upgradable	7.06%	11.36%	0.90%	2.24%

MODS Accept Rates
(Data are from USPS LR-H-113)

Sort Level	**BCS Accept Rate**
OP	95.00%
OS	95.00%
MMP	95.00%
SCF	95.00%
IP	95.00%
IS	89.90%
DBCS Accept Rates	
First Pass	95.00%
Second Pass	95.00%

CSBCS Accept Rates
(Data are from Docket No. MC95-1, Exhibit USPS-T-10G)

First Pass	98.50%
Second & Third Pass	99.00%

Development of First-Class Mail Processing Model Unit Costs

Mailflow Densities Used in Flow Models

(All data are from Docket No. MC95-1, USPS LR-MCR-3)

MLOCR/ISS	OP (BCS)	OS	MMP	SCF	IP	IS	Total
831&881 OP	2.62%	21.92%	5.00%	14.07%	10.44%	45.96%	100.00%
832 OS		17.70%	18.17%	50.14%	8.01%	5.98%	100.00%
833 MMP			4.35%	16.23%	9.85%	69.58%	100.00%
834 SCF				9.15%	5.88%	84.97%	100.00%
835 IP					7.69%	92.31%	100.00%

MPBCS/DBCS**	OP	OS	MMP	SCF	IP	IS	Total
871&891 OP	**0.32%**	17.15%	22.17%	22.42%	16.05%	22.22%	100.32%
872 OS		**1.35%**	50.91%	24.55%	17.64%	6.90%	101.35%
873 MMP			**0.96%**	23.35%	10.23%	66.42%	100.96%
874 SCF*				**0.92%**	4.53%	95.47%	100.92%
875 IP					**1.21%**	100.00%	101.21%

*diagonal allocated 100% to IS

MPBCS-OSS	OP (BCS)	OS	MMP	SCF	IP	IS	Total
971 OP	0.33%	22.42%	5.62%	17.01%	14.00%	40.62%	100.00%
972 OS		20.79%	13.22%	38.81%	16.77%	10.42%	100.00%
973 MMP			2.95%	16.88%	12.28%	67.89%	100.00%
974 SCF				5.50%	4.86%	89.64%	100.00%
975 IP					4.66%	95.34%	100.00%

MANUAL	OP (BCS)	OS	MMP	SCF	IP	IS	Total
OP		15.48%	36.22%	16.42%	12.18%	19.70%	100.00%
OS			42.85%	19.43%	14.41%	23.31%	100.00%
MMP				43.63%	26.47%	29.90%	100.00%
SCF					6.47%	93.53%	100.00%
IP						100.00%	100.00%

**Bold numbers indicate second handlings (i.e., flows to same machine/ same level) and are captured in the cost summary page. Numbers off the diagonal are normalized to 100% and used in the flows.

Development of First-Class Mail Processing Model Unit Costs

Coverage Factors Used in Flow Models

MLOCR 3D ORIGINATING	98.99%	1/
MPBCS/DBCS 3D ORIGINATING	99.31%	2/
MPBCS/DBCS DESTINATING	95.42%	3/
MLOCR 3D DESTINATING	94.43%	4/
AUTO INC/SEC TOTAL GIVEN BCS 3D DESTINATION	90.70%	5/
DPS GIVEN BCS 3D DESTINATION	81.57%	6/
DPS OR SEC/SEG OF AUTO IS GIVEN BCS 3D DEST.	89.94%	7/
RBCS 3D ORIGINATING	96.73%	8/
RBCS 3D DESTINATING	88.80%	9/
NON-ELIGIBLE AUTO CAR. ROUTE DESTINATING	62.27%	10/
DBCS VOLUME SHARE OF DPS	80.00%	11/
CSBCS VOLUME SHARE OF DPS	20.00%	12/
BCS ORIGINATING MINUS BCS DESTINATING	4.42%	13/
MLOCR ORIGINATING MINUS BCS DESTINATING	4.11%	14/
NON-AUTO ORIGIN TO AUTO DESTINATION	0.51%	15/
NON-AUTO ORIGIN TO AUTO DESTINATION INCL R TO L	49.88%	16/
AADC MAIL NOT FOR SCFS	79.60%	17/
BCS DESTINATION COVERAGE FACTOR GIVEN BCS ORIGIN W/R-L	95.58%	18/
BCS DESTINATION COVERAGE FACTOR GIVEN OCR ORIGIN W/R-L	95.89%	19/
BCS DEST GIVEN AADC/ADC AUTO (ADJ FOR SCFS AND AADC MAN)	94.25%	20/
PORTION DESTINATING AT AUTO IS ZONE	86.55%	21/
PO BOXES FOR NON-CARRIER ROUTE PRESORT FCM	8.90%	22/
RBCS LEAKAGE FACTOR	5.00%	23/

Rows 1/ - 16/: Base coverage factors are from USPS LR-H-128.
Row 17/: MC95-1, Exhibit USPS-T-10E.
Row 18/: 1 - row 13.
Row 19/: 1 - row 14.
Row 20/: 1 - ((1 - row 3) / row 17).
Row 21/: Row 3 * row 5.
Row 22/: Docket No. MC95-1, Exhibit USPS-T-10i at 1.
Row 23/: USPS national target for RBCS leakage.

Development of First-Class Mail Processing Model Unit Costs

Entry Profiles Used in Flow Models

(All data are from Appendix IV unless otherwise indicated. Page numbers are indicated below each profile.)

Nonautomation

	Non-OCR Upgradable Trays					OCR Upgradable Trays	
	OCR Upgradable Mail		Non-OCR Upgradable Mail				
	Auto	Manual	Auto	Manual	Non-Mach	Auto	Manual
OP	11.27%	0.03%	0.45%	0.01%	0.56%	25.18%	0.26%
ADC/AADC	5.58%	0.07%	0.60%	0.01%	0.75%	12.60%	0.13%
SCF	0.00%	0.00%	0.00%	0.00%	0.00%	3.23%	0.03%
IP	19.48%	0.56%	7.70%	1.02%	9.63%	46.88%	2.77%
IS(IP-OCR)	53.40%	0.00%	30.17%	0.00%	0.00%	7.65%	0.00%
IS	5.48%	4.14%	3.09%	4.41%	41.59%	0.78%	0.50%
Total	100.00%		100.00%			100.00%	
Source:	*Appendix IV, Page 12*		*Appendix IV, Page 10*			*Appendix IV, Page 14*	

Automation

	Automation Basic		Automation 3-Digit		Automation 5-Digit	
	Auto	Manual	Auto	Manual	Auto	Manual
OP	47.97%	0.33%				
ADC/AADC	40.87%	0.28%				
SCF	10.47%	0.07%				
IP	0.00%	0.00%	95.42%	4.58%		
IS(IP-OCR)	0.00%	0.00%				
IS	0.00%	0.00%			86.55%	13.45%
Total	100.00%		100.00%		100.00%	
Source:	*Appendix IV, Page 16*		*Appendix I, page 35, row 3*		*Appendix I, page 35, row 21*	

Development of First-Class Mail Processing Model Unit Costs

Wage Rates, Premium Pay Factors, Piggyback Factors, and Other Inputs Used in Flow Models

Wage Rates		
RBCS	$14.919	1/
All other Clerks/Mailhandlers	$25.445	2/
Premium Pay Factors		
First-Class Presort	1.011	3/
Piggyback Factors		
Manual (manl)	1.372	4/
Mechanized (lsm)	2.240	5/
MLOCR (ocr)	2.095	6/
RBCS (LDC 15)	1.450	7/
LMLM (LDC 15)	1.450	8/
BCS-OSS (MPBCS)	1.719	9/
MPBCS (MPBCS)	1.719	10/
DBCS (DBCS)	2.434	11/
CSBCS (CSBCS)	1.948	12/
Sort to PO Box (LDC 44)	1.366	13/
Verification and Prep Costs		
Presort Acceptance and Verification Costs - cents per piece	0.0699	14/

Row 1/: Test year wage rates (USPS LR-H-146).
Row 2/: Test year wage rates (USPS LR-H-146).
Row 3/: Test year First-Class presort premium pay factor (USPS LR-H-77).
Rows 4/ - 13/: Test year operation specific piggyback factors (USPS LR-H-77).
Row 14/: Appenix V, page 3 of 4, LDC 79 unit cost (business mail entry).

USPS-T-25
Appendix II

First-Class Mail Characteristics Data

I. INTRODUCTION

Appendix II contains the First-Class Mail characteristics data that are used throughout the development of mail processing unit costs in this testimony. All data come from a recent field study conducted specifically to update the First-Class Mail characteristics (USPS LR-H-105). Appendix II shows the results of that study and combines those results into a summary form that is used in various places in this testimony. The primary uses of the mail characteristics data in this testimony are for bundle sorting cost calculations (Appendix III) and entry profile calculations (Appendix IV). In both cases the information that is needed is the breakdown of First-Class presort mail volume by container presort level or container/bundle presort level. Mail characteristics data are also used to determine the amount of non-machinable mail and to weight the three nonautomation model costs together.

II. FIRST-CLASS MAIL CHARACTERISTICS RESULTS

The results of the First-Class Mail characteristics study are shown for six different types of First-Class non-carrier route presort mail:

- Nonautomation presort non-OCR upgradable mail in non-OCR trays
- Nonautomation presort OCR upgradable mail in non-OCR trays
- Nonautomation presort OCR upgradable mail in OCR trays
- Automation basic presort
- Automation 3-digit presort
- Automation 5-digit presort

For the first two types of mail, the results show the volume of mail broken down into container/bundle presort levels. This is because for nonautomation presort mail in non-OCR upgradable trays mail must be prepared in bundles before it is put into trays. The results also show the average number of pieces in each bundle. This information is used to determine bundle sorting costs in Appendix III.

For nonautomation presort mail in OCR upgradable trays and for automation presort mail, all mail comes in full trays. Therefore the results show volume by tray presort level only. The automation presort results have been divided into the three rate categories of automation mail: basic, 3-digit, and 5-digit. This division was straightforward because only mail in 5-digit trays receives the 5-digit rate, only mail in 3-digit trays receives the 3-digit rate, and all other automation presort trays receive the basic rate.

III. SUMMARY OF RESUTLS

The last page of Appendix II shows an aggregation of the results from the preceding pages with a few additional calculations. First, the volume of nonautomation presort non-OCR upgradable mail in non-OCR trays is divided into its machinable and non-machinable components. The summary of results also calculates the percentage of non-OCR mail in non-OCR trays that is non-machinable. This percentage is used in Appendix IV in calculating the entry profile for non-OCR mail in non-OCR trays. Second, the summary page calculates the percentage breakdown of nonautomation mail into its three component parts: non-OCR mail in non-OCR trays, OCR mail in non-OCR trays, and OCR mail in OCR trays. This is accomplished by using the totals from the previous pages of mail characteristics results.

First-Class Mail Characteristics Data

Nonautomation Presort Non-OCR Upgradable Mail in Non-OCR Trays

	[1]	[2]	[3]	[4]	[5]
		Tray Presort Level			
	5-Digit	3-Digit	ADC	Mixed ADC	Total
Full 5-Digit Trays					
Pieces	1,032,992	N/A	N/A	N/A	1,032,992
5-Digit Bundles					
Pieces	N/A	1,103,615	86,157	55,888	1,245,660
Pieces per package	N/A	31.7	18.5	27.6	
3-Digit Bundles					
Pieces	N/A	208,411	174,265	144,881	527,557
Pieces per package	N/A	39.1	32.4	25.1	
ADC Bundles					
Pieces	N/A	N/A	2,851	36,528	39,379
Pieces per package	N/A	N/A	24.5	19.0	
Mixed ADC Bundles					
Pieces	N/A	N/A	N/A	29,253	29,253
Pieces per package	N/A	N/A	N/A	51.1	
Total					
Pieces 1/	**1,032,992**	**1,312,026**	**263,273**	**266,550**	**2,874,841**

Row 1/: Sum of the piece volumes from all rows.
Column [1]: USPS LR-H-105, total pieces in 5-digit trays.
Column [2]: USPS LR-H-105, total pieces in 3-digit trays.
Column [3]: USPS LR-H-105, total pieces in ADC trays.
Column [4]: USPS LR-H-105, total pieces in mixed ADC trays.
Column [5]: Sum of piece volumes from columns 1 - 4.

First-Class Mail Characteristics Data

Nonautomation Presort OCR Upgradable Mail in Non-OCR Trays

		[1]	[2]	[3]	[4]	[5]
			Tray Presort Level			
		5-Digit	3-Digit	ADC	Mixed ADC	Total
Full 5-Digit Trays						
Pieces		183,056	N/A	N/A	N/A	183,056
5-Digit Bundles						
Pieces		N/A	179,285	4,263	16,795	200,343
Pieces per package		N/A	35.0	16.9	18.6	
3-Digit Bundles						
Pieces		N/A	14,467	14,567	43,040	72,074
Pieces per package		N/A	38.9	27.1	32.3	
ADC Bundles						
Pieces		N/A	N/A	1,638	33,671	35,309
Pieces per package		N/A	N/A	24.1	18.7	
Mixed ADC Bundles						
Pieces		N/A	N/A	N/A	14,536	14,536
Pieces per package		N/A	N/A	N/A	58.8	
Total						
Pieces	1/	**183,056**	**193,752**	**20,468**	**108,042**	**505,318**

Row 1/: Sum of the piece volumes from all rows.
Column [1]: USPS LR-H-105, total pieces in 5-digit trays.
Column [2]: USPS LR-H-105, total pieces in 3-digit trays.
Column [2]: USPS LR-H-105, total pieces in ADC trays.
Column [2]: USPS LR-H-105, total pieces in mixed ADC trays.
Column [5]: Sum of piece volumes from columns 1 - 4.

First-Class Mail Characteristics Data

Nonautomation Presort OCR-Upgradable and Automation Presort

		[1]	[2]	[3]	[4]
		Nonautomation Presort	Automation Presort		
		OCR-Upgradable	Basic	3-Digit	5-Digit
5-Digit Trays		281,478			8,967,204
3-Digit Trays		1,565,393		19,388,008	
AADC Trays		504,094	2,201,894		
Mixed AADC Trays		802,032	2,057,484		
Total	1/	**3,152,997**	**4,259,378**	**19,388,008**	**8,967,204**

Row 1/: Sum of the piece volumes from all rows.
Column [1]: USPS LR-H-105, total pieces by tray presort level.
Column [2]: USPS LR-H-105, total pieces in AADC and mixed AADC trays.
Column [3]: USPS LR-H-105, total pieces in 3-digit trays.
Column [4]: USPS LR-H-105, total pieces in 5-digit trays.

First-Class Mail Characteristics Data

Volume Summary

First-Class nonautomation presort		
Mail in Non-OCR upgradable trays		
Non-OCR Upgradable Mail	2,874,841	1/
Non-machinable	1,597,340	2/
Machinable	1,277,501	3/
OCR Upgradable Mail	505,318	4/
Total	**3,380,159**	5/
Mail in OCR upgradable trays	**3,152,997**	6/
Total nonautomation presort	**6,533,156**	7/
First-Class automation presort		
Non-carrier route automation presort		
Basic	4,259,378	8/
3-Digit	19,388,008	9/
5-Digit	8,967,204	10/
Total automation presort	**32,614,590**	11/
Total First-Class non-carrier route presort	**39,147,746**	12/
Non-machinable mail as a percent of non-OCR mail in non-OCR trays	**55.56%**	13/
Non-OCR mail in non-OCR trays as a percent of nonautomation mail	44.00%	14/
OCR mail in non-OCR trays as a percent of nonautomation mail	7.73%	15/
OCR mail in OCR trays as a percent of nonautomation mail	48.26%	16/
	100.00%	17/

Row 1/: Appendix II, page 3 of 6, sum of column 5.
Row 2/: USPS LR-H-105, total non-machinable pieces.
Row 3/: Row 1 - row 2.
Row 4/: Appendix II, page 4 of 6, sum of column 5.
Row 5/: Row 1 + row 4.
Row 6/: Appendix II, page 5 of 6, sum of column 1.
Row 7/: Row 5 + row 6.
Row 8/: Appendix II, page 5 of 6, sum of column 2.
Row 9/: Appendix II, page 5 of 6, sum of column 3.
Row 10/: Appendix II, page 5 of 6, sum of column 4.
Row 11/: Row 8 + row 9 + row 10.
Row 12/: Row 7 + row 11.
Row 13/: Row 2 / row 1.
Row 14/: Row 1 / row 7.
Row 15/: Row 4 / row 7.
Row 16/: Row 6 / row 7.
Row 17/: Row 14 + row 15 + row 16.

USPS-T-25
Appendix III

First-Class Mail Bundle Sorting Cost Calculations

I. INTRODUCTION

Appendix III shows the development of bundle sorting costs for the types of mail that are prepared in bundles. Only mail in non-OCR upgradable trays is prepared in bundles. This testimony identifies two different types of mail that are prepared in non-OCR trays: non-OCR upgradable mail and OCR upgradable mail. Therefore the purpose of this appendix is to develop a separate bundle sorting cost per piece for these two types of mail.

Because these types of mail are prepared in bundles, they will processed through a number of bundle sorting operations before they are broken apart and sorted in piece distribution operations. The number of bundle sorting operations incurred by a particular bundle is dependent on a number of factors, the main one being the presort level of the bundle and the presort level of the tray that the bundle happens to be in. In normal mail processing operations, trays of letter mail are sorted intact through to the finest level possible. For example, if a tray of 3-digit presort mail is entered at an origin P&DC, it will be sorted intact to its destination ADC or P&DC. Once the tray has been sorted to the finest level possible, it will be opened and the bundles within that tray will be sorted. As with trays, bundles of letter mail will also be sorted intact to the finest level possible.[1] For example, when an ADC tray is opened at an origin P&DC, all of the three digit presort bundles in that tray will be sorted intact to their respective destination P&DCs. Therefore, depending on the combination of tray and bundle presort level a bundle can pass through a different number of bundle sorting operations.

Based on this general description of bundle sorting operations, this appendix calculates a bundle sorting cost associated with non-OCR mail in non-OCR trays and OCR mail in non-OCR trays. Calculation of bundle sorting costs is a four step process: (1) determine the cost per bundle for the two different methods of bundle sorting, (2) weight the costs together for the different bundle sorting operations at each sort level,

[1] Bundles in non-OCR upgradable trays are sometimes broken for piece distribution before they are sorted to the bundle presort level. See pages 4-5 of this appendix for a description.

(3) add together bundle sorting costs for the different tray/bundle presort combinations to yield a total bundle sorting cost for each combination, and (4) weight the bundle sorting costs by tray/bundle presort level based on the mail characteristics data.

II. COSTS FOR BUNDLE SORTING METHODS

Bundles can be sorted in one of two different general operations: pouch rack bundle sorting and tray opening unit bundle sorting. Both operations are similar, but have slightly different productivities. Calculating a cost per bundle for each operation is very similar to calculating the costs by operation in the piece distribution models. The calculation begins with the productivity (expressed in bundles per hour) associated with each operation. The productivities are from Docket No. MC95-1; however, they have been adjusted to account for mail processing volume variability. Next, the test year clerk and mail handler wage rate[2] is divided by these productivities to yield a direct labor cost per bundle. As with piece distribution operations, this direct cost per bundle is multiplied by the appropriate piggyback factor and adjusted upward by the First-Class presort premium pay factor. The result is the total cost per bundle for pouch rack bundle sorting and tray opening unit bundle sorting. All of these calculations are shown on page 6 of this appendix.

III. BUNDLE SORTING COSTS BY SORT LEVEL

The next step in calculating bundle sorting costs is to develop a different cost per bundle based on the bundle presort level and type of bundle sort. First-Class presort mail in non-OCR upgradable trays can include bundles made up to the following levels: mixed ADC, ADC, 3-digit, and 5-digit. The different types of bundle sorts are defined by the sort level that the bundle is being sorted from and the sort level that the bundle is

[2] The wage rate used for calculating bundle sorting costs is the other mail processing wage. See pages 9-10 of Appendix I for a discussion of wage rates.

being sorted to. They include: mixed ADC to ADC, ADC to 3-digit, 3-digit to 5-digit, and a final operation. The final operation represents the costs that are incurred in making the final separation once the bundle has been sorted to the finest level possible. For example, once a 3-digit bundle has been sorted to the 3-digit level, it will receive one more separation to isolate the 3-digit bundles (that are ready for piece distribution) from any 5-digit bundles that will receive another bundle sort. The final operation is not relevant for 5-digit bundles, because once a 5-digit bundle is sorted to the 5-digit level, no further separations are necessary.

The cost for one bundle sort differs by sort type and bundle presort level based on two factors: the mix of bundle sorting methods and the number of bundles actually receiving a given sort. The values for each of these two factors are taken from witness Smith in Docket No. MC95-1 (Exhibit USPS-T-10B). By weighting the bundle sorting costs by method by the mix of methods and then adjusting for the number of operations, a unique cost for each bundle sort by sort type and bundle presort level is developed. The bundle sorting costs by cost pool calculations are shown on page 7 of this appendix.

IV. BUNDLE SORTING COST BY TRAY/BUNDLE PRESORT LEVEL

The next step is to determine for each different combination of tray and bundle presort level, the different bundle sorts that will be incurred. As stated earlier, the number of bundle sorts received by given bundle is dependent upon not only the bundle presort level, but also the tray presort level. For example, a 3-digit bundle in an ADC tray may only receive a sort from the ADC level to the 3-digit level, while a 5-digit bundle in an ADC tray may receive a sort from the ADC level to the 3-digit level and then from the 3-digit level to the 5-digit level.

On page 8 of this appendix, each different combination of tray and bundle presort level is listed down the left-hand side of the page. Across the top of the page each of the different types of bundle sorts are listed. This grid is filled in with bundle

sorting costs based on which types of sorts will be incurred. For example, a 5-digit bundle in an ADC tray receives a sort from ADC to 3-digit and 3-digit to 5-digit. An ADC bundle in a mixed ADC tray receives a sort from mixed ADC to ADC and a final operation. Once the grid is filled in with the appropriate costs per bundle sort, the costs are aggregated across all sort types in the right-most column. This total bundle sorting cost represents the total costs to sort one bundle from tray presort level down to the bundle presort level. As would be expected, the greater the difference between bundle and tray presort level, the greater the total bundle sorting cost per bundle. The total bundle sorting cost calculations are shown on page 8.

V. WEIGHTING BUNDLE SORTING COSTS WITH MAIL CHARACTERISTICS DATA

The final step in developing the average bundle sorting costs for different types of mail is to weight the total bundle sorting costs by tray/bundle presort level combinations together based on the mail characteristics data for each type of mail. Page 9 of this appendix show the weighting process for non-OCR mail in non-OCR trays and page 10 shows the weighting process for OCR mail in non-OCR trays.

The first column on each of these pages shows the volume of mail that falls into each of the different tray/bundle presort level combinations. These data are taken directly from the mail characteristics study results (Appendix II) for each type of mail. The percent of total volume in each tray/bundle presort combination is calculated in column 2 in order to weight the appropriate bundle sorting costs. Column 3 shows the percentage of bundles that are actually sorted all the way through to the bundle presort level. For mail that is OCR upgradable, a certain percentage of bundles are not sorted all the way through to the bundle presort level. Instead, these bundles are broken where the tray is opened and the pieces are put directly into piece distribution operations.

Therefore, for non-OCR mail the percent of the bundle used is 100 percent in all cases because non-OCR mail is difficult to barcode on the OCR. In the development of

bundle sorting costs for OCR upgradable mail, however, the percent of bundle used in column 3 is less than 100 percent. The percent of bundle usage estimates are taken from witness Smith in Docket No. MC95-1. In that docket a special study was conducted to determine how often bundles are broken to be put on automation. Witness Smith adjusted the results of that study to disaggregate them between non-automation compatible mail and automation compatible mail. In his testimony (USPS-T-10) he used a figure of 100 percent of non-automation compatible pieces, and the figures shown in column 3 of page 10 of this appendix for automation compatible mail. In keeping with his methodology, the same bundle breaking percentages are used in this testimony.

Column 4 shows the total bundle sorting cost per bundle based on tray/bundle presort level calculated on page 8. Column 5 shows the average number of pieces per bundle for each tray/bundle presort level combination. These figures are used to convert bundle sorting costs per bundle into costs per pieces. The average number of pieces per bundle come directly from the First-Class Mail characteristics results in Appendix II. The last column contains the weighted bundle sorting cost per piece for each tray/bundle presort level combination. This weighted cost is calculated by multiplying the total bundle sorting cost (column 4) by the percentage of the bundle used (column 3) by the percentage of volume (column 2) and then dividing by the average number of pieces per bundle. To get the final average bundle sorting cost per piece for each type, all of the weighted bundle sorting cost figures in column 6 are added together. The result is shown in row 1 of each page.

First-Class Mail Bundle Sorting Cost Calculations

Bundle Sorting Costs by Operation

Inputs		
Test year wage rate	$25.445	1/
First-Class premium pay adjustment	1.011	2/
Productivities (bundles per hour)		
Pouch rack bundle sorting	199	3/
Tray opening unit bundle sorting	160	4/
Piggyback factors		
Pouch rack bundle sorting	1.607	5/
Tray opening unit bundle sorting	1.607	6/
Costs by operations		
Labor cost per bundle (cents)		
Pouch rack bundle sorting	12.8085	7/
Tray opening unit bundle sorting	15.9299	8/
Total cost per bundle (cents)		
Pouch rack bundle sorting	20.7241	9/
Tray opening unit bundle sorting	25.7745	10/

Row 1/: Clerk and mail handler productive hourly wage (USPS LR-H-146).
Row 2/: First-Class presort prelum pay adjustment factor (USPS LR-H-77).
Row 3/: Productivity used by witness Smith (Docket No. MC95-1, Exhibit USPS-T-10B at 1, column 1) adjusted by a variability factor of 74.5% (see USPS-T-12 for variabilities).
Row 4/: Productivity used by witness Smith (Docket No. MC95-1, Exhibit USPS-T-10B at 1, column 1) adjusted by a variability factor of 74.5% (see USPS-T-12 for variabilities).
Row 5/: Bundle sorting piggyback factor (USPS LR-H-77).
Row 6/: Bundle sorting piggyback factor (USPS LR-H-77).
Row 7/: Row 1 * 100 / row 3.
Row 8/: Row 1 * 100 / row 4.
Row 9/: (Row 7 * row 5) + (row 7 * (row 2 - 1)).
Row 10/: (Row 8 * row 6) + (row 8 * (row 2 - 1)).

First-Class Mail Bundle Sorting Cost Calculations

Bundle Sorting Costs by Sort Type and Bundle Type

	Operation cost		[1] Mixed ADC to ADC		[2] ADC to SCF/3-digit		[3] SCF/3-digit to 5-digit		[4] Final operation	
5-digit bundles										
No. of operations			0.5	3/	0.8	3/	1.3	3/		
% pouch rack	20.7241	1/	100.0%	4/	50.0%	4/	18.7%	4/		
% sort to tray	25.7745	2/	0.0%	4/	50.0%	4/	81.3%	4/		
Cost per sort			**10.3620**	5/	**18.5994**	5/	**32.2793**	5/		
3-digit bundles										
No. of operations			0.5	3/	1	3/			0.5	3/
% pouch rack	20.7241	1/	100.0%	4/	50.0%	4/			0.0%	4/
% sort to tray	25.7745	2/	0.0%	4/	50.0%	4/			100.0%	4/
Cost per sort			**10.3620**	5/	**23.2493**	5/			**12.8873**	5/
ADC bundles										
No. of operations			1	3/					1	3/
% pouch rack	20.7241	1/	100.0%	4/					0.0%	4/
% sort to tray	25.7745	2/	0.0%	4/					100.0%	4/
Cost per sort			**20.7241**	5/					**25.7745**	5/
Mixed ADC bundles										
No. of operations									1	3/
% pouch rack	20.7241	1/							0.0%	4/
% sort to tray	25.7745	2/							100.0%	4/
Cost per sort									**25.7745**	5/

Row 1/: Appendix III, page 6 of 10, row 9.
Row 2/: Appendix III, page 6 of 10, row 10.
Row 3/: Number of operations are from Docket No. MC95-1, Exhibit USPS-T-10B, page 2 of 5.
Row 4/: Percentage of sort type are from Docket No MC95-1, Exhibit USPS-T-10B, page 2 of 5.
Row 5/: No. of Operations 3/ * ((% pouch rack 4/ * 1/) + (% sort to tray 4/ * 2/))

First-Class Mail Bundle Sorting Cost Calculations

Presort Bundle Sorting Costs by Sort Type and Bundle/Container Type

	[1] Mixed ADC to ADC	[2] ADC/AADC to SCF/3-digit	[3] SCF/3-digit to 5-digit	[4] Final operation	[5] Total Cost
Full 5-digit trays	0.0000	0.0000	0.0000	0.0000	0.0000
Full 3-digit trays	0.0000	0.0000	0.0000	0.0000	0.0000
5-digit bundles in 3-digit/SCF trays	0.0000	0.0000	32.2793	0.0000	32.2793
3-digit bundles in 3-digit/SCF trays	0.0000	0.0000	0.0000	12.8873	12.8873
5-digit bundles in ADC trays	0.0000	18.5994	32.2793	0.0000	50.8788
3-digit bundles in ADC trays	0.0000	23.2493	0.0000	12.8873	36.1365
ADC bundles in ADC trays	0.0000	0.0000	0.0000	25.7745	25.7745
5-digit bundles in mixed ADC trays	10.3620	18.5994	32.2793	0.0000	61.2408
3-digit bundles in mixed ADC trays	10.3620	23.2493	0.0000	12.8873	46.4986
ADC bundles in mixed ADC trays	20.7241	0.0000	0.0000	25.7745	46.4986
Mixed ADC bundles in mixed ADC trays	0.0000	0.0000	0.0000	25.7745	25.7745

Column [1]: Appendix III, page 7 of 10, column 1.
Column [2]: Appendix III, page 7 of 10, column 2.
Column [3]: Appendix III, page 7 of 10, column 3.
Column [4]: Appendix III, page 7 of 10, column 4.
Column [5]: Column 1 + column 2 + column 3 + column 4.

First-Class Mail Bundle Sorting Cost Calculations

Nonautomation Presort Non-OCR Upgradable Mail in Non-OCR Trays

	[1] Volume	[2] Percent of volume	[3] Percent of bundle used	[4] Bundle sorting cost	[5] Pieces per bundle	[6] Cost per piece
Full 5-digit trays	1,032,992	35.93%	100.00%	0.0000	N/A	0.0000
5-digit bundles in 3-digit trays	1,103,615	38.39%	100.00%	32.2793	31.70	0.3909
3-digit bundles in 3-digit trays	208,411	7.25%	100.00%	12.8873	39.10	0.0239
5-digit bundles in ADC trays	86,157	3.00%	100.00%	50.8788	18.50	0.0824
3-digit bundles in ADC trays	174,265	6.06%	100.00%	36.1365	32.40	0.0676
ADC bundles in ADC trays	2,851	0.10%	100.00%	25.7745	24.50	0.0010
5-digit bundles in mixed ADC trays	55,888	1.94%	100.00%	61.2408	27.60	0.0431
3-digit bundles in mixed ADC trays	144,881	5.04%	100.00%	46.4986	25.10	0.0934
ADC bundles in mixed ADC trays	36,528	1.27%	100.00%	46.4986	19.00	0.0311
Mixed ADC bundles in mixed ADC trays	29,253	1.02%	100.00%	25.7745	51.10	0.0051
Total	**2,874,841**	**100.00%**				**0.7386** 1/

Row 1/: Sum of all previous rows in column 6.
Column [1]: Appendix II, page 3 of 6.
Column [2]: Percentage of pieces in column 1 (value in column 1 divided by the total of column 1).
Column [3]: Docket No. MC95-1, Exhibit USPS-T-10C, page 2 of 7, column 2.
Column [4]: Appendix III, page 8 of 10, column 5.
Column [5]: Appendix II, page 3 of 6.
Column [6]: Column 2 * column 3 * column 4 / column 5.

First-Class Mail Bundle Sorting Cost Calculations

Nonautomation Presort OCR Upgradable Mail in Non-OCR Trays

	[1] Volume	[2] Percent of volume	[3] Percent of bundle used	[4] Bundle sorting cost	[5] Pieces per bundle	[6] Cost per piece
Full 5-digit trays	183,056	36.23%	100.00%	0.0000	N/A	0.0000
5-digit bundles in 3-digit trays	179,285	35.48%	69.11%	32.2793	35.00	0.2261
3-digit bundles in 3-digit trays	14,467	2.86%	69.11%	12.8873	38.90	0.0066
5-digit bundles in ADC trays	4,263	0.84%	54.50%	50.8788	16.90	0.0138
3-digit bundles in ADC trays	14,567	2.88%	54.50%	36.1365	27.10	0.0209
ADC bundles in ADC trays	1,638	0.32%	54.50%	25.7745	24.10	0.0019
5-digit bundles in mixed ADC trays	16,795	3.32%	54.50%	61.2408	18.60	0.0596
3-digit bundles in mixed ADC trays	43,040	8.52%	54.50%	46.4986	32.30	0.0668
ADC bundles in mixed ADC trays	33,671	6.66%	54.50%	46.4986	18.70	0.0903
Mixed ADC bundles in mixed ADC trays	14,536	2.88%	54.50%	25.7745	58.80	0.0069
Total	**505,318**	**100.00%**				**0.4930** 1/

Row 1/: Sum of all previous rows in column 6.
Column [1]: Appendix II, page 4 of 6.
Column [2]: Percentage of pieces in column 1 (value in column 1 divided by the total of column 1).
Column [3]: Docket No. MC95-1, Smith Workpaper Part VII at 6, column 6.
Column [4]: Appendix III, page 8 of 10, column 5.
Column [5]: Appendix II, page 4 of 6.
Column [6]: Column 2 * column 3 * column 4 / column 5.

USPS-T-25
Appendix IV

First-Class Mail Entry Profile Calculations

I. INTRODUCTION

The purpose of Appendix IV is to develop the entry profiles that are used to enter mail into each of the mail flow models contained in Appendix I. The entry profiles are used to determine where a particular type of mail receives its first piece distribution operation. Where mail receives its first piece distribution operation is determined in large part by two factors: the tray or bundle presort characteristics of the mail and whether or not the mail is entered at an automated facility. With these two pieces of information, a distribution of mail among the different sort levels (OP, OS, ADC/AADC, SCF, IP, and IS) and among the different equipment (BCS, OCR, and manual) is developed for each mail flow model.

The methodology used to develop the entry profile for each type of mail in this testimony is different from that used in Docket No. MC95-1. There are two main differences between the two methods. First, the new method develops the entry profiles not only by sort level but also by equipment type. In Docket No. MC95-1, the entry profile developed a distribution of mail only by sort level. The distribution of mail entering on different equipment type was handled within the flow models. Second, the new methodology makes additional adjustments to the entry profiles based on bundle breaking. These adjustments were not a part of the previous methodology. The calculation of entry profiles will be described in three parts: division of mail characteristics data into equipment type, determination of entry sort level, and additional adjustments.

The calculations for this appendix are shown on pages 9-16. For each type of mail that is modeled, there are two pages of entry profile calculations. The first page in each pair describes the division of mail characteristics into equipment type and the second page shows the entry profile by sort level. Table IV-1 gives the specific page numbers for each type of mail:

TABLE IV-1.
ORGANIZATION OF APPENDIX IV

II. DIVISION OF MAIL CHARACTERISTICS DATA INTO EQUIPMENT TYPE

The development of entry profiles is different for mail types that are prepared in bundles than for mail types that are prepared only in full trays. The entry profile calculations for each type of mail will be described in turn.

A. MAIL PREPARED IN BUNDLES

For the mail types that are prepared in bundles, development of the entry profile begins with the breakdown of volume into the different combinations of tray/bundle presort level. On the first page of calculations for each mail type, the first column shows the percentage breakdown of mail into the various combinations of tray/bundle presort level. Column 2 shows the percentage of each bundle type that is actually sorted to the finest level possible before receiving piece distribution. The data from columns 1 and 2 come directly from the bundle sorting calculations in Appendix III.

The next step is to divide the volumes by tray/bundle presort level in two different ways. First, volumes are split between used and broken bundles. Used bundles reflect the portion of mail in bundles that actually receives bundle sorting to the bundle presort level. Used bundles are calculated by multiplying column 1 by column 2. Broken bundles reflect the portion of mail in bundles that get broken at the tray presort level. Broken bundles are calculated by multiplying column 1 by one minus column 2. Second, the volume in used and broken bundles is further divided between OCR and manual operations. This division is accomplished through the use of two coverage

factors: the origin OCR coverage factor and the destination OCR coverage factor. To determine how much of a particular tray/bundle presort combination is entered on the OCR, the percentage of volume from column 1 is multiplied by either the OCR origin or destination coverage factor. If the bundle is used and the bundle presort level is an origin presort level (mixed ADC or ADC) then the OCR origin coverage factor is used to split the volume between OCR and manual. If the bundle is used and the bundle presort level is a destination presort level (3-digit or 5-digit) then the OCR destination coverage factor is used. If the bundle is broken and the tray presort level is an origin presort level then the OCR origin coverage factor is used. If the bundle is broken and the tray presort level is a destination presort level then the OCR destination coverage factor is used.

The two divisions described above result in columns 3-6. Column 3 represents the percentage of mail in bundles that are used and entered on the OCR, column 4 represents bundles that are broken and entered on the OCR, column 5 represents bundles that are used and entered on manual, and column 6 represents bundles that are broken and entered on manual. Once this division is completed, one further adjustment is needed to reconcile the usage of coverage factors with the bundle breaking percentages.

The coverage factors used to determine the amount of mail that originates or destinates on automated equipment are averages for all First-Class presort mail. These percentages do not make a distinction between OCR upgradable and non-OCR upgradable mail. As stated in Appendix III, bundles are broken in order to process mail on automated piece distribution operations. Therefore, broken bundles should not be entered on manual piece distribution operations. Columns 7-9 adjust the mail entry percentages to account for this discrepancy.

Column 7 adjusts the broken bundles on OCR to include the broken bundles on manual. These adjusted figures reflect the fact that broken bundles are only entered on automated equipment. However, by increasing the amount of mail entering on the OCR, the distribution of mail between OCR and manual operations has been skewed.

To compensate for this, two further adjustments are necessary. First, the number of used bundles on the OCR is decreased by the amount broken bundles in manual. The results of this adjustment are shown in column 8. This adjustment increases the amount of mail on the OCR to the appropriate level. Second, the amount of used bundles on manual is adjusted upward by the amount of broken bundles on manual. The results of this adjustment are shown in column 9. The second adjustment restores the appropriate amount of mail entering on manual operations. Once the split between OCR and manual has been adjusted as described above, the next step is to map the volumes into the appropriate sort levels.

B. MAIL PREPARED IN FULL TRAYS

The division of mail characteristics data into equipment type for mail prepared in full trays is similar to the division for mail prepared in bundles, except that it is more straightforward. On the first page in each set of entry profile calculations for mail prepared in full trays (OCR upgradable mail in OCR trays and automation basic mail), column 1 shows the volume by tray presort level. These volumes come directly from the mail characteristics study results in Appendix II. Column 2 shows percentage distribution of volume from column 1. Columns 3 and 4 show the division of volume shares from column 2 into automated entry and manual entry. For the OCR upgradable mail in OCR trays, automated entry means OCR entry since the mail is not barcoded. For automation basic mail, automated entry means BCS because all of the mail is prebarcoded.

The division between automated and manual entry is again accomplished through the use of origin and destination coverage factors. For mail in trays that have an origin presort level (mixed ADC and ADC), the amount entered on automation equipment is determined by either the origin OCR coverage factor or the origin BCS coverage factor. For mail in trays that have a destination presort level (3-digit and 5-

digit), the amount of mail entered on automated equipment is determined by either the destination OCR coverage factor or the destination BCS coverage factor.

III. DETERMINATION OF ENTRY SORT LEVEL

The next step in developing the entry profiles for each type of mail is to map the proportions of volume by equipment type into sort levels by equipment type. The second page in each set of entry profile calculations shows how this mapping is done.

In the case of mail prepared in bundles, the following guidelines are used to map volume proportions into sort levels. If the bundle is used, it is mapped into sort level according to the rules shown in Table IV-2.

TABLE IV-2.
MAPPING OF USED BUNDLES INTO SORT LEVELS

Used bundle presort level	**Corresponding sort level**
Mixed ADC	OP
ADC	ADC
3-digit	IP
5-digit	IS

For mail prepared in bundles when the bundles are broken or for mail prepared in trays, volume proportions are mapped into sort level based on tray presort level. Table IV-3 describes the mapping process for broken bundles and full trays.

TABLE IV-3.
MAPPING OF BROKEN BUNDLES AND FULL TRAYS INTO SORT LEVELS

Broken bundle / tray presort level	**Corresponding sort level**
Mixed AADC	OP
AADC	AADC
3-digit	IP
5-digit	IS

The tables on the second page of each set of entry profile calculations show the results of the mapping of volume proportions into sort levels for each equipment type. Once this mapping is completed, the volume proportions are aggregated over sort level to yield a preliminary entry profile. Only a few adjustments are required in order to complete the entry profile calculations.

IV. ADDITIONAL ADJUSTMENTS

Up to three additional adjustments are needed in order to complete the entry profile calculations so that they can be used in the flow models. Those adjustments are: non-machinable mail, IS mail entered at the IP OCR, and AADC mail entered at the SCF.

A. NON-MACHINABLE MAIL

As stated earlier, a certain percentage of non-OCR mail in non-OCR trays is actually non-machinable mail. Non-machinable mail is accounted for separately in the entry profile calculations for non-OCR upgradable mail in non-OCR trays. The percentage of non-machinable mail is multiplied by the preliminary entry profile for mail entering on the OCR. The resulting percentages are moved over to the manual entry side of the page and placed in the columns corresponding to the appropriate sort levels.

In the flow model for non-OCR mail in non-OCR trays, this mail is entered separately in the manual operations at each sort level and this mail never has the opportunity to move from manual operations to automated operations.

B. IS MAIL ENTERED AT THE IP OCR

Another adjustment is made to the amount of mail entering in automated IS operations in each of the entry profile calculations. Mail in 5-digit trays or bundles at a destination plant that has automated equipment may be processed on an incoming primary OCR operation in order have that mail barcoded before it gets to incoming secondary. As witness Smith (USPS-T-10) indicated in Docket No. MC95-1, the percentage of 5-digit mail that is destinating at an automated facility and is destinating at an automated incoming secondary zone will be processed on the incoming primary OCR. The automated IS zone given automated destination coverage factor is used to split the mail entering in automated IS operations between the IP OCR mail and regular IS mail. In the mail flow models, the IS mail that is entered on the IP OCR, although entered at the incoming primary level, is treated separately in the flow model. The regular IS mail is entered on the manual operation at the IS level because it is not destinating at an automated IS zone.

C. AADC MAIL ENTERED AT THE SCF

The last adjustment that is made to the preliminary entry profile percentages by sort level applies only to mail that is prepared to the AADC level. There are a significant number of instances where an AADC service area of a given facility is identical to its SCF service area. Mail processed at these facilities can never receive both an AADC sort and a SCF sort, because the service areas are one and the same. Since the mailflow densities used in the mail flow models in Appendix I show mail flowing from the AADC sort level to the SCF sort level, it is necessary to adjust for this situation in the entry profile.

First, an estimate is developed of the percentage of mail that is processed by AADCs that have the same service area their SCF service area. This estimate comes from the coverage factors listed in Appendix I, page 35. Next, this percentage is applied to the amount of mail in the preliminary entry profile that enters at the AADC.

The resulting mail is entered at the SCF sort level in the mail flow models. By entering this mail at the SCF sort level, it can never receive both an AADC and a SCF piece distribution operation.

First-Class Mail Entry Profile Calculations

Nonautomation Presort Non-OCR Upgradable Mail in Non-OCR Trays

CR Origin Coverage Factor	98.99% 1/
OCR Destination Coverage Factor	94.43% 2/

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
	Weight	Percent of bundle used	Used Bunldes on OCR	Broken Bundles on OCR	Used Bundles on Man	Broken Bundles on Man	Adjusted Broken Bundles on OCR	Adjusted Used Bundles on OCR	Adjusted Used Bundles on Man
Full 5-digit trays	35.93%	100.00%	33.93%	0.00%	2.00%	0.00%	0.00%	33.93%	2.00%
5-digit bundles in 3-digit trays	38.39%	100.00%	36.25%	0.00%	2.14%	0.00%	0.00%	36.25%	2.14%
3-digit bundles in 3-digit trays	7.25%	100.00%	6.85%	0.00%	0.40%	0.00%	0.00%	6.85%	0.40%
5-digit bundles in ADC trays	3.00%	100.00%	2.83%	0.00%	0.17%	0.00%	0.00%	2.83%	0.17%
3-digit bundles in ADC trays	6.06%	100.00%	5.72%	0.00%	0.34%	0.00%	0.00%	5.72%	0.34%
ADC bundles in ADC trays	0.10%	100.00%	0.10%	0.00%	0.00%	0.00%	0.00%	0.10%	0.00%
5-digit bundles in MADC trays	1.94%	100.00%	1.84%	0.00%	0.11%	0.00%	0.00%	1.84%	0.11%
3-digit bundles in MADC trays	5.04%	100.00%	4.76%	0.00%	0.28%	0.00%	0.00%	4.76%	0.28%
ADC bundles in MADC trays	1.27%	100.00%	1.26%	0.00%	0.01%	0.00%	0.00%	1.26%	0.01%
MADC bundles in MADC trays	1.02%	100.00%	1.01%	0.00%	0.01%	0.00%	0.00%	1.01%	0.01%
Total	**100.00%**								

Row 1/: Appendix I, page 35 of 37, row 1.
Row 2/: Appendix I, page 35 of 37, row 4.
Column [1]: Appendix III, page 9 of 10, column 2.
Column [2]: Appendix III, page 9 of 10, column 3.
Column [3]: Column 1 * column 2 * (1/ or 2/ depending on bundle presort level)
Column [4]: Column 1 * (1 - column 2) * (1/ or 2/ depending on tray presort level)
Column [5]: Column 1 * column 2 * ((1 - 1/) or (1 - 2/) depending on bundle presort level)
Column [6]: Column 1 * (1 - column 2) * ((1 - 1/) or (1 - 2/) depending on tray presort level)
Column [7]: Column 4 + column 6.
Column [8]: Column 3 - column 6.
Column [9]: Column 5 + column 6.

First-Class Mail Entry Profile Calculations

Nonautomation Presort Non-OCR Upgradable Mail In Non-OCR Trays (Continued)

Non-machinable portion of non-OCR mail in non-OCR trays 55.56% 1/
Auto IS given auto destination 90.70% 2/

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
	Automation Entry				Manual Entry			
	IS	IP	ADC	OP	IS	IP	ADC	OP
Full 5-digit trays	33.93%				2.00%			
5-digit bundles in 3-digit trays	36.25%	0.00%			2.14%			
3-digit bundles in 3-digit trays		6.85%				0.40%		
5-digit bundles in ADC trays	2.83%		0.00%		0.17%			
3-digit bundles in ADC trays		5.72%	0.00%			0.34%		
ADC bundles in ADC trays			0.10%				0.00%	
5-digit bundles in MADC trays	1.84%			0.00%	0.11%			
3-digit bundles in MADC trays		4.76%		0.00%		0.28%		
ADC bundles in MADC trays			1.26%	0.00%			0.01%	
MADC bundles in MADC trays				1.01%				0.01%
Total	**74.85%**	**17.33%**	**1.36%**	**1.01%**	**4.41%**	**1.02%**	**0.01%**	**0.01%**
Non-machinable adjustment	**-41.59%**	**-9.63%**	**-0.75%**	**-0.56%** 3/	**41.59%**	**9.63%**	**0.75%**	**0.56%** 4/
IS Entered at IP - OCR	**30.17%** 5/							
Regular IS	**3.09%** 6/							

Row 1/: Appendix II, page 6 of 6, row 13.
Row 2/: Appendix I, page 35 of 37, row 5.
Row 3/: Row 1/ * total entry profile * -1.
Row 4/: Row 3/ * -1.
Row 5/: Portion of machinable 5-digit mail at automated facilities that is processed on the IP OCR (total auto IS - non-machinable auto IS * 2/).
Row 6/: Portion of machinable 5-digit mail at automated facilities that is processed in manual IS operations (total auto IS - non-machinable auto IS - 5/).
Column [1]: 5-digit bundles that are used on the OCR (Appendix IV, page 9 of 16, column 8) and bundles in 5-digit trays that are broken on the OCR (Appendix IV, page 9 of 16, column 7).
Column [2]: 3-digit bundles that are used on the OCR (Appendix IV, page 9 of 16, column 8) and bundles in 3-digit trays that are broken on the OCR (Appendix IV, page 9 of 16, column 7).
Column [3]: ADC bundles that are used on the OCR (Appendix IV, page 9 of 16, column 8) and bundles in ADC trays that are broken on the OCR (Appendix IV, page 9 of 16, column 7).
Column [4]: MADC bundles that are used on the OCR (Appendix IV, page 9 of 16, column 8) and bundles in MADC trays that are broken on the OCR (Appendix IV, page 9 of 16, column 7).
Column [5]: 5-digit bundles that are used in manual (Appendix IV, page 9 of 16, column 9).
Column [6]: 3-digit bundles that are used in manual (Appendix IV, page 9 of 16, column 9).
Column [7]: ADC bundles that are used in manual (Appendix IV, page 9 of 16, column 9).
Column [8]: MADC bundles that are used in manual (Appendix IV, page 9 of 16, column 9).

First-Class Mail Entry Profile Calculations

Nonautomation Presort OCR Upgradable Mail In Non-OCR Trays

CR Origin Coverage Factor 98.99% 1/
OCR Destination Coverage Factor 94.43% 2/

	[1] Weight	[2] Percent of bundle used	[3] Used Bundles on OCR	[4] Broken Bundles on OCR	[5] Used Bundles on Man	[6] Broken Bundles on Man	[7] Adjusted Broken Bundles on OCR	[8] Adjusted Used Bundles on OCR	[9] Adjusted Used Bundles on Man
Full 5-digit trays	36.23%	100.00%	34.21%	0.00%	2.02%	0.00%	0.00%	34.21%	2.02%
5-digit bundles in 3-digit trays	35.48%	69.11%	23.15%	10.35%	1.37%	0.61%	10.96%	22.54%	1.98%
3-digit bundles in 3-digit trays	2.86%	69.11%	1.87%	0.84%	0.11%	0.05%	0.88%	1.82%	0.16%
5-digit bundles in ADC trays	0.84%	54.50%	0.43%	0.38%	0.03%	0.00%	0.38%	0.43%	0.03%
3-digit bundles in ADC trays	2.88%	54.50%	1.48%	1.30%	0.09%	0.01%	1.31%	1.47%	0.10%
ADC bundles in ADC trays	0.32%	54.50%	0.17%	0.15%	0.00%	0.00%	0.15%	0.17%	0.00%
5-digit bundles in MADC trays	3.32%	54.50%	1.71%	1.50%	0.10%	0.02%	1.51%	1.70%	0.12%
3-digit bundles in MADC trays	8.52%	54.50%	4.38%	3.84%	0.26%	0.04%	3.88%	4.34%	0.30%
ADC bundles in MADC trays	6.66%	54.50%	3.59%	3.00%	0.04%	0.03%	3.03%	3.56%	0.07%
MADC bundles in MADC trays	2.88%	54.50%	1.55%	1.30%	0.02%	0.01%	1.31%	1.54%	0.03%
Total	**100.00%**								

Row 1/: Appendix I, page 35 of 37, row 1.
Row 2/: Appendix I, page 35 of 37, row 4.
Column [1]: Appendix III, page 10 of 10, column 2.
Column [2]: Appendix III, page 10 of 10, column 3.
Column [3]: Column 1 * column 2 * (1/ or 2/ depending on bundle presort level)
Column [4]: Column 1 * (1 - column 2) * (1/ or 2/ depending on tray presort level)
Column [5]: Column 1 * column 2 * ((1 - 1/) or (1 - 2/) depending on bundle presort level)
Column [6]: Column 1 * (1 - column 2) * ((1 - 1/) or (1 - 2/) depending on tray presort level)
Column [7]: Column 4 + column 6.
Column [8]: Column 3 - column 6.
Column [9]: Column 5 + column 6.

First-Class Mail Entry Profile Calculations

Nonautomation Presort OCR Upgradable Mail in Non-OCR Trays (Continued)

Auto IS given auto destination 90.70% 1/

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
	Automation Entry				Manual Entry			
	IS	IP	ADC	OP	IS	IP	ADC	OP
Full 5-digit trays	34.21%				2.02%			
5-digit bundles in 3-digit trays	22.54%	10.96%			1.98%			
3-digit bundles in 3-digit trays		2.70%				0.16%		
5-digit bundles in ADC trays	0.43%		0.38%		0.03%			
3-digit bundles in ADC trays		1.47%	1.31%			0.10%		
ADC bundles in ADC trays			0.32%				0.00%	
5-digit bundles in MADC trays	1.70%			1.51%	0.12%			
3-digit bundles in MADC trays		4.34%		3.88%		0.30%		
ADC bundles in MADC trays			3.56%	3.03%			0.07%	
MADC bundles in MADC trays				2.85%				0.03%
Total	**58.88%**	**19.48%**	**5.58%**	**11.27%**	**4.14%**	**0.56%**	**0.07%**	**0.03%**

IS Entered at IP - OCR **53.40%** 2/
Regular IS **5.48%** 3/

Row 1/: Appendix I, page 35 of 37, row 5.
Row 2/: Portion of machinable 5-digit mail at automated facilities that is processed on the IP OCR (total auto IS - non-machinable auto IS * 1/).
Row 3/: Portion of machinable 5-digit mail at automated facilities that is processed in manual IS operations (total auto IS - non-machinable auto IS - 2/).
Column [1]: 5-digit bundles that are used on the OCR (Appendix IV, page 11 of 16, column 8) and bundles in 5-digit trays that are broken on the OCR (Appendix IV, page 11 of 16, column 7).
Column [2]: 3-digit bundles that are used on the OCR (Appendix IV, page 11 of 16, column 8) and bundles in 3-digit trays that are broken on the OCR (Appendix IV, page 11 of 16, column 7).
Column [3]: ADC bundles that are used on the OCR (Appendix IV, page 11 of 16, column 8) and bundles in ADC trays that are broken on the OCR (Appendix IV, page 11 of 16, column 7).
Column [4]: MADC bundles that are used on the OCR (Appendix IV, page 11 of 16, column 8) and bundles in MADC trays that are broken on the OCR (Appendix IV, page 11 of 16, column 7).
Column [5]: 5-digit bundles that are used in manual (Appendix IV, page 11 of 16, column 9).
Column [6]: 3-digit bundles that are used in manual (Appendix IV, page 11 of 16, column 9).
Column [7]: ADC bundles that are used in manual (Appendix IV, page 11 of 16, column 9).
Column [8]: MADC bundles that are used in manual (Appendix IV, page 11 of 16, column 9).

First-Class Mail Entry Profile Calculations

Nonautomation Presort in OCR Upgradable Trays

CR Origin Coverage Factor	98.99% 1/
OCR Destination Coverage Factor	94.43% 2/

	[1] Volumes	[2] Percent	[3] Auto	[4] Non-Auto
5-Digit Trays	281,478	8.93%	8.43%	0.50%
3-Digit Trays	1,565,393	49.65%	46.88%	2.77%
AADC Trays	504,094	15.99%	15.83%	0.16%
Mixed ADC Trays	802,032	25.44%	25.18%	0.26%
Total	**3,152,997**	**100.00%**		

Row 1/: Appendix I, page 35 of 37, row 1.
Row 2/: Appendix I, page 35 of 37, row 4.
Column [1]: Appendix II, page 5 of 6, column 1.
Column [2]: Percentage of pieces in column 1 (value in column 1 divided by the total of column 1).
Column [3]: Column 2 * (1/ or 2/ depending on tray presort level)
Column [4]: Column 2 * ((1 - 1/) or (1 - 2/) depending on tray presort level)

First-Class Mail Entry Profile Calculations

Nonautomation Presort In OCR Upgradable Trays (Continued)

Auto IS given auto destination	90.70% 1/
AADCs with SCF service areas	20.40% 2/

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
	Automation Entry				Manual Entry			
	IS	IP	AADC	OP	IS	IP	AADC	OP
5-Digit Trays	8.43%				0.50%			
3-Digit Trays		46.88%				2.77%		
AADC Trays			15.83%				0.16%	
Mixed ADC Trays				25.18%				0.26%
Total	**8.43%**	**46.88%**	**15.83%**	**25.18%**	**0.50%**	**2.77%**	**0.16%**	**0.26%**
IS Entered at IP - OCR	**7.65%** 3/							
Regular IS	**0.78%** 4/							
AADC Entered at SCF			**3.23%** 5/				**0.03%** 5/	
Regular AADC			**12.60%** 6/				**0.13%** 6/	

Row 1/: Appendix I, page 35 of 37, row 5.
Row 2/: (1 - Appendix I, page 34 of 36, row 17).
Row 3/: Portion of machinable 5-digit mail at automated facilities that is processed on the IP OCR (total auto IS - non-machinable auto IS * 1/).
Row 4/: Portion of machinable 5-digit mail at automated facilities that is processed in manual IS operations (total auto IS - non-machinable auto IS - 3/).
Row 5/: Portion of mail in AADC trays where the AADC has the same service area as the SCF (total AADC * 2/).
Row 6/: Portion of mail in AADC trays where the AADC does not have the same service area as the SCF (total AADC - 5/).
Column [1]: Mail in 5-digit trays entering at automated facilities (Appendix IV, page 13 of 16, column 3).
Column [2]: Mail in 3-digit trays entering at automated facilities (Appendix IV, page 13 of 16, column 3).
Column [3]: Mail in AADC trays entering at automated facilities (Appendix IV, page 13 of 16, column 3).
Column [4]: Mail in mixed AADC trays entering at automated facilities (Appendix IV, page 13 of 16, column 3).
Column [5]: Mail in 5-digit trays entering at non-automated facilities (Appendix IV, page 13 of 16, column 4).
Column [6]: Mail in 3-digit trays entering at non-automated facilities (Appendix IV, page 13 of 16, column 4).
Column [7]: Mail in AADC trays entering at non-automated facilities (Appendix IV, page 13 of 16, column 4).
Column [8]: Mail in mixed AADC trays entering at non-automated facilities (Appendix IV, page 13 of 16, column 4).

First-Class Mail Entry Profile Calculations
Automation Basic Presort

BCS Origin Coverage Factor	99.31% 1/
BCS Destination Coverage Factor	95.42% 2/

	[1] Volumes	[2] Percent	[3] Auto	[4] Non-Auto
5-Digit Trays	N/A	N/A	N/A	N/A
3-Digit Trays	N/A	N/A	N/A	N/A
ADC Trays	2,201,894	51.70%	51.34%	0.36%
Mixed ADC Trays	2,057,484	48.30%	47.97%	0.33%
Total	**4,259,378**	**100.00%**		

Row 1/: Appendix I, page 35 of 37, row 2.
Row 2/: Appendix I, page 35 of 37, row 3.
Column [1]: Appendix II, page 5 of 6, column 2.
Column [2]: Percentage of pieces in column 1 (value in column 1 divided by the total of column 1).
Column [3]: Column 2 * (1/ or 2/ depending on tray presort level)
Column [4]: Column 2 * ((1 - 1/) or (1 - 2/) depending on tray presort level)

First-Class Mail Entry Profile Calculations

Automation Basic Presort (Continued)

AADCs with SCF service areas 20.40% 1/

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
	Automation Entry				Manual Entry			
	IS	IP	AADC	OP	IS	IP	AADC	OP
5-Digit Trays	N/A				N/A			
3-Digit Trays		N/A				N/A		
ADC Trays			51.34%				0.36%	
Mixed ADC Trays				47.97%				0.33%
Total	0.00%	0.00%	51.34%	47.97%	0.00%	0.00%	0.36%	0.33%
AADC Entered at SCF			10.47% 2/				0.07% 2/	
Regular AADC			40.87% 3/				0.28% 3/	

Row 1/: (1 - Appendix I, page 35 of 37, row 17).
Row 2/: Portion of mail in AADC trays where the AADC has the same service area as the SCF (total AADC * 1/).
Row 3/: Portion of mail in AADC trays where the AADC does not have the same service area as the SCF (total AADC - 2/).
Column [1]: Mail in 5-digit trays entering at automated facilities (Appendix IV, page 15 of 16, column 3).
Column [2]: Mail in 3-digit trays entering at automated facilities (Appendix IV, page 15 of 16, column 3).
Column [3]: Mail in AADC trays entering at automated facilities (Appendix IV, page 15 of 16, column 3).
Column [4]: Mail in mixed AADC trays entering at automated facilities (Appendix IV, page 15 of 16, column 3).
Column [5]: Mail in 5-digit trays entering at non-automated facilities (Appendix IV, page 15 of 16, column 4).
Column [6]: Mail in 3-digit trays entering at non-automated facilities (Appendix IV, page 15 of 16, column 4).
Column [7]: Mail in AADC trays entering at non-automated facilities (Appendix IV, page 15 of 16, column 4).
Column [8]: Mail in mixed AADC trays entering at non-automated facilities (Appendix IV, page 15 of 16, column 4).

USPS-T-25
Appendix V

First-Class Mail Processing
CRA Unit Cost Calculations

I. INTRODUCTION

The purpose of Appendix V is to divide the unit mail processing benchmark costs into their fixed and proportional components. As discussed on page 19 of this testimony, the new MODS cost pool methodology used to calculate mail processing costs allows for the division of the benchmark unit costs into the 46 component cost pools. The additional detail in benchmark costs allows for a more sophisticated method of reconciling model costs to the CRA-based benchmarks costs. This new method depends on splitting each of the unit benchmark costs into two distinct cost components: a fixed component and a proportional component.

Dividing the benchmark costs into these two components is relatively straightforward. Page 3 of this appendix shows the division of the First-Class non-carrier route presort letter benchmark and page 4 shows the division of the First-Class non-carrier route presort card benchmark.

II. DIVISION OF BENCHMARK COSTS

The division of benchmark costs into the proportional and fixed components is exactly the same for letters as it is for cards. Column 1 of pages 3 and 4 lists the unit costs included in the benchmark by the 46 different cost pools. Column 2 shows an "X" in each row that represents a cost pool that is treated as proportional. Column 3 shows an "X" in each row that represents a cost pool that is treated as fixed. In column 4, the unit costs for each proportional cost pool are listed and in column 5 the unit costs for each fixed cost pool are listed. The only cost pool that is not treated as entirely fixed or entirely proportional is the non-MODS cost pool. The non-MODS cost pool includes the mail processing costs that occur at all non-MODS facilities. Non-MODS costs are distributed between the proportional and fixed components in the same proportion as the aggregate of all MODS cost pools.

Once every cost pool has been divided between proportional and fixed in column 4 and 5, the proportional and fixed costs are aggregated all cost pools. The sum of

column 4 represents the proportional portion of the benchmark unit cost and the sum of column 5 represent the fixed portion of the benchmark unit costs. In Docket No. MC95-1, because no breakdown of benchmark unit costs into components was available, all benchmark unit costs were treated as proportional. In general, nearly all of the cost pools are appropriately categorized as proportional; however, in this testimony, certain specific cost pools were isolated as fixed because the costs would not be expected to vary with the level of work sharing. The fixed cost pools include:

- 1Platfrm: Platform activities at MODS facilities including loading, unloading, etc.
- 1SackS_h: Manual sack sorting at MODS facilities (includes tray sorting).
- 1Sacks_m: Mechanized sack sorting at MODS facilities (includes tray sorting).
- All BMC cost pools: nmo, psm, spb, ssm, othr, pla

Each of the cost pools listed above are treated as fixed because the First-Class non-carrier route presort costs that appear in these cost pools would not be expected vary with the level of barcoding or presorting.

First-Class Mail Processing CRA Unit Cost Calculations

CRA Letter Mail Processing Unit Costs by Cost Pool

Location	Cost Pool	[1] 1C Non-CR Presort Cost	[2] Proportional	[3] Fixed	[4] Proportional Costs	[5] Fixed Costs	
mods	bcs/	1.0964	X		1.0964		
mods	express	0.0018	X		0.0018		
mods	fsm/	0.0036	X		0.0036		
mods	ism/	0.0460	X		0.0460		
mods	manf	0.0078	X		0.0078		
mods	manl	0.4575	X		0.4575		
mods	manp	0.0017	X		0.0017		
mods	mecparc	0.0001	X		0.0001		
mods	ocr/	0.1648	X		0.1648		
mods	priority	0.0040	X		0.0040		
mods	spbs Oth	0.0022	X		0.0022		
mods	spbsPrio	0.0047	X		0.0047		
mods	BusReply	0.0039	X		0.0039		
mods	INTL	0.0055	X		0.0055		
mods	LD15	0.4526	X		0.4526		
mods	LD41	0.0324	X		0.0324		
mods	LD42	0.0005	X		0.0005		
mods	LD43	0.1590	X		0.1590		
mods	LD44	0.0681	X		0.0681		
mods	LD48 Exp	0.0001	X		0.0001		
mods	LD48 Oth	0.0087	X		0.0087		
mods	LD48_SSv	0.0030	X		0.0030		
mods	LD49	0.2464	X		0.2464		
mods	LD79	0.0699	X		0.0699		
mods	MAILGRAM	0.0000	X		0.0000		
mods	Registry	0.0000	X		0.0000		
mods	REWRAP	0.0007	X		0.0007		
mods	1Bulk pr	0.0136	X		0.0136		
mods	1CancMPP	0.0278	X		0.0278		
mods	1EEQMT	0.0134	X		0.0134		
mods	1MISC	0.0322	X		0.0322		
mods	1OPbulk	0.0368	X		0.0368		
mods	1OPpref	0.2580	X		0.2580		
mods	1Platfrm	0.2533		X		0.2533	
mods	1POUCHNG	0.1847	X		0.1847		
mods	1SackS_h	0.0337		X		0.0337	
mods	1SackS_m	0.0037		X		0.0037	
mods	1SCAN	0.0249	X		0.0249		
mods	1SUPPORT	0.0360	X		0.0360		
BMCs	nmo	0.0000		X		0.0000	
BMCs	psm	0.0000		X		0.0000	
BMCs	spb	0.0004		X		0.0004	
BMCs	ssm	0.0000		X		0.0000	
BMCs	Othr	0.0000		X		0.0000	
BMCs	Pla	0.0010		X		0.0010	
Non Mods		0.8450	92.27%	7.73%	0.7797	0.0653	1/
Total		**4.6059**			**4.2486**	**0.3573**	

Row 1/: The non mods costs have been split between proportional and fixed based on the split of the aggregate of all mods cost pools.
Column [1]: USPS LR-H-106.
Column [2]: Cost pools that have been treated as proportional (see explanation on pages 1-2 of Appendix V).
Column [3]: Cost pools that have been treated as fixed (see explanation on pages 1-2 of Appendix V).
Column [4]: Mail processing costs that have been treated as proportional (see explanation on pages 1-2 of Appendix V).
Column [5]: Mail processing costs that have been treated as fixed (see explanation on pages 1-2 of Appendix V).

First-Class Mail Processing CRA Unit Cost Calculations

CRA Card Mail Processing Unit Costs by Cost Pool

Location	Cost Pool	[1] 1C Non-CR Presort Cost	[2] Proportional	[3] Fixed	[4] Proportional Costs	[5] Fixed Costs	
mods	bcs/	0.4442	X		0.4442		
mods	express	0.0000	X		0.0000		
mods	fsm/	0.0003	X		0.0003		
mods	lsm/	0.0522	X		0.0522		
mods	manf	0.0225	X		0.0225		
mods	manl	0.6976	X		0.6976		
mods	manp	0.0000	X		0.0000		
mods	mecparc	0.0000	X		0.0000		
mods	ocr/	0.1014	X		0.1014		
mods	priority	0.0000	X		0.0000		
mods	spbs Oth	0.0087	X		0.0087		
mods	spbsPrio	0.0011	X		0.0011		
mods	BusReply	0.0116	X		0.0116		
mods	INTL	0.0001	X		0.0001		
mods	LD15	0.3454	X		0.3454		
mods	LD41	0.0114	X		0.0114		
mods	LD42	0.0039	X		0.0039		
mods	LD43	0.0773	X		0.0773		
mods	LD44	0.0056	X		0.0056		
mods	LD48 Exp	0.0000	X		0.0000		
mods	LD48 Oth	0.0034	X		0.0034		
mods	LD48_SSv	0.0000	X		0.0000		
mods	LD49	0.1742	X		0.1742		
mods	LD79	0.0991	X		0.0991		
mods	MAILGRAM	0.0000	X		0.0000		
mods	Registry	0.0000	X		0.0000		
mods	REWRAP	0.0000	X		0.0000		
mods	1Bulk pr	0.0212	X		0.0212		
mods	1CancMPP	0.0246	X		0.0246		
mods	1EEQMT	0.0100	X		0.0100		
mods	1MISC	0.0541	X		0.0541		
mods	1OPbulk	0.0242	X		0.0242		
mods	1OPpref	0.0754	X		0.0754		
mods	1Platfrm	0.1401		X		0.1401	
mods	1POUCHNG	0.1640	X		0.1640		
mods	1SackS_h	0.0000		X		0.0000	
mods	1SackS_m	0.0001		X		0.0001	
mods	1SCAN	0.0000	X		0.0000		
mods	1SUPPORT	0.0313	X		0.0313		
BMCs	nmo	0.0000		X		0.0000	
BMCs	psm	0.0000		X		0.0000	
BMCs	spb	0.0000		X		0.0000	
BMCs	ssm	0.0000		X		0.0000	
BMCs	Othr	0.0000		X		0.0000	
BMCs	Pla	0.0000		X		0.0000	
Non Mods		0.6544	94.62%	5.38%	0.6192	0.0352	
Total		**3.2597**			**3.0843**	**0.1764**	1/

1/ The non mods costs have been split between proportional and fixed based on the split of the aggregate of all mods cost pools.

Row 1/: The non mods costs have been split between proportional and fixed based on the split of the aggregate of all mods cost pools.
Column [1]: USPS LR-H-106.
Column [2]: Cost pools that have been treated as proportional (see explanation on pages 1-2 of Appendix V).
Column [3]: Cost pools that have been treated as fixed (see explanation on pages 1-2 of Appendix V).
Column [4]: Mail processing costs that have been treated as proportional (see explanation on pages 1-2 of Appendix V).
Column [5]: Mail processing costs that have been treated as fixed (see explanation on pages 1-2 of Appendix V).